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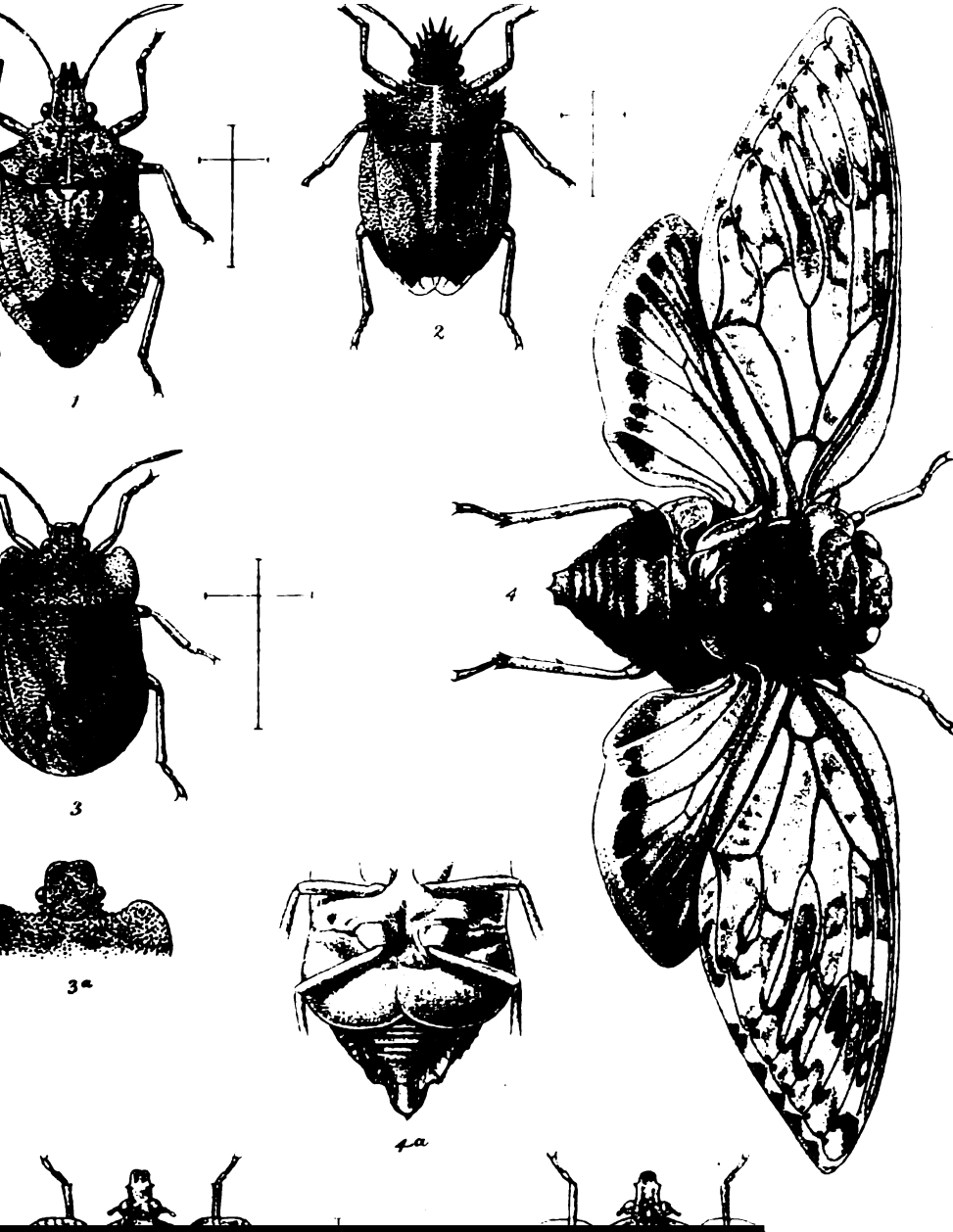


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## ERRATA.

Page 46, lines 1, 18 and 21, for "*Skeltonii*" read "*Skellonii*."
„ 46, line 15, for "Skelton" read "Skellon."
„ 249, insert space between lines 9 and 10 from bottom.
„ 250, line 15, & p. 287, line 2, for "*flavivitella*" read "*flavivittella*."
„ 508, line 6, for "*P. proteinoides*" read "*B. proteinoides*."



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1876 Kraatz, Dr. G. (President of the German Entomological Society), *Link-strasse, Berlin.*
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1875 Lamarche, Oscar, 70 *Rue Louvrex, Liége.*
1868 Lang, Lieut.-Col. A. M., R.E., *Simla, India.*
1880 Lang, Henry Charles, M.D., F.L.S., 41 *Berners-st., Oxford-street*, W.
1868 Lendy, Major Augustus F., F.L.S., F.G.S., *Sunbury House, Sunbury*, S.W.
1876 Lewis, George.
1876 Lichtenstein, Jules, *La Lironde, near Montpellier.*
1885 † Lingwood, Robert Maulkin, M.A., F.L.S., F.G.S., 6 *Park Villas, Cheltenham.*
1875 Livingstone, Clermont, *Tudor Lodge, Snaresbrook*, E.
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1851 † M'Intosh, J.
1858 M'Lachlan, Robert, F.R.S., F.L.S., 39 *Limes-grove, Lewisham*, S.E.
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1873 S. Marsh, John Geo., 16 *Hanover-st., Rye-lane, Peckham*, S.E.
1865 Marshall, Rev. Thos. Ansell, M.A., F.L.S., *Golconda Estate, near San Fernando, Trinidad.*
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1860 May, John William, K.N.L., *Arundel House, Percy Cross, Fulham-road*, S.W.
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1872 Meldola, Raphael, F.R.A.S., F.C.S., 21 *John-st., Bedford, row*, W.C.
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1871 S. Miskin, W. H., *Brisbane, Queensland.*
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1869 † Müller, Albert, F.R.G.S., 195 A *Junkerstrasse, Berne, Switzerland.*
1876 Müller, Dr. Clemens.
1872 † Murray, Lieut. H., 70th Brigade Depôt, *Tralee, Ireland.*

1878 Nevinson, Basil George, 19 *Torrington-square*, W.C.
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1851 Preston, Rev. Thomas Arthur, M.A., F.L.S., *The Green, Marlborough, Wilts.*
1876 Preudhomme de Borre, Alfred (Sec., Ent. Soc. of Belgium), 19 *Rue de Dublin, Ixelles, near Brussels.*
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1874 Reed, Edwyn C., F.L.S., *Calle Collegia, Valparaiso, Chili.*
1865 Reeks, Henry, F.L.S., *Manor House, Thruxton, near Andover, Hants.*
1871 Riley, C. V., State Entomologist, *United States Entomological Commission, Washington.*
1858 Ripon, George Frederick Samuel Robinson, Marquis of, K.G., F.R.S., F.L.S., &c., 1 *Carlton-gardens,* S.W.
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1877 Slater, John Wm., 18 *Wray-crescent, Tollington Park*, N.
1880 Smith, Miss Emily A. (Assist. State Entomologist of Illinois), *Peoria, Illinois;* and *Care of Dr. R. Leuckart, Leipzig.*
1869 Smith, Henley Grose, *Warnford-court, Throgmorton-st.*, E.C.
* † Spence, William Blundell, *Rome.*
1848 † Stainton, Henry Tibbats, F.R.S., F.L.S., F.G.S., &c., PRESIDENT, *Mountsfield, Lewisham*, S.E.
1878 Standen, Richard S., *Alby Hill House, Hanworth, Norfolk.*
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1837 Stevens, Samuel, F.L.S., *Loanda, Beulah Hill, Upper Norwood*, S.E.
1876 Swinton, A. H., *Binfield House, Waterden-road, Guildford.*

1856 Thomson, Jas., 12 *Rue de Presbourg, Place de l'Etoile, Paris.*
1859 † Trimen, Roland, F.L.S. (Curator of South African Museum), *Cape Town, Cape of Good Hope.*

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1866 Verrall, G. H., *Sussex Lodge, Newmarket.*

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1866 Walsingham, Thomas de Grey, Lord, M.A., F.Z.S., &c., *Eaton House, Eaton-square*, S.W.
1866 Ward, Christopher, F.L.S., *Savile-road, Halifax.*
1869 Waterhouse, Charles O., *British Museum*, W.C.
* Waterhouse, George R., F.Z.S., &c., *British Museum*, W.C.
1869 Websdale, C. G., 78 *High-street, Barnstaple.*
1845 Weir, John Jenner, F.L.S., 6 *Haddo Villas, Blackheath*, S.E.
1876 Western, E. Young, 27 *Craven Hill Gardens, Bayswater*, W.
* Westwood, John Obadiah, M.A., F.L.S., &c., Hope Professor of Zoology, *Walton Manor, Oxford.*
1868 † White, F. Buchanan, M.D., F.L.S., *Perth*, N.B.
1865 White, Rev. W. Farren, *Stonehouse Vicarage, Gloucestershire.*
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1878 Woodgate, John, *Richmond-road, New Barnet, Herts.*
1874 Wood-Mason, James, F.G.S., F.L.S. (Curator of the Indian Museum), *Calcutta.*
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1865 S. Young, Morris, *Free Museum, Paisley.*

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DURING THE YEAR

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THE

TRANSACTIONS

OF THE

ENTOMOLOGICAL SOCIETY

OF

LONDON

FOR THE YEAR 1881.

# I. *Descriptions of new Genera and Species of* Heterocerous Lepidoptera *from Japan.* By Arthur G. Butler, F.L.S., F.Z.S., &c.

[Read February 2nd, 1881.]

## SPHINGES and BOMBYCES.

The species described in the present paper are chiefly from the collection made by Mr. Montague Fenton at Tokei; to these I have added a series forwarded by Mr. Pryer from Yokohama, and a few species obtained by Mr. Maries at Nikko.

### SPHINGIDÆ.

#### Cinogon, n. g.

Allied to *Pterogon*, Boisd. (*Proserpinus*), but the primaries not angulated as in that genus, their form being almost that of *Pergesa*, but narrower, and with slightly undulated outer margin; secondaries also very like *Pergesa*, but with more acute apex, and with slightly undulated margin; antennæ not hooked at the extremity, terminating in a small pencil of hair, more slender than in *Pergesa*; character of markings as in *Pterogon* and allied groups. Type, *C. cingulatum*.



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1. *Cinogon cingulatum*, n. s.

Primaries pale rosy brown, or dull reddish flesh-colour, with brown-speckled white costal border; a short oblique reddish olivaceous belt across the base, followed by two slender parallel oblique lines of the same colour; an oblique patch immediately beyond the cell, followed by an oblique internally sharply defined and externally diffused belt, followed again by a slender slightly undulated oblique discal line; all these are olivaceous; external border broad, but terminating obliquely at apex, and external angle; greyish, excepting towards apex, where it is white, mottled throughout with grey; fringe white spotted with blackish at the extremities of the veins; inner margin white towards the base; secondaries purplish black crossed by an irregular externally bisinuated tawny belt and with blackish-mottled brown external border; fringe white spotted with blackish; body bright golden brown, the head and sides of tegulæ clouded with olive; margins of head, collar, tegulæ, and thorax, and posterior margins of the abdominal segments, snow-white; antennæ white, tawny in front; under surface tawny, varied with dull pink, brown and white; wings crossed by two parallel brownish oblique discal lines; costal borders mottled with white; external borders as above; basal area of primaries dusky; margins of palpi, a tuft behind them, upper surface of legs, and hind margins of abdominal segments, white; expanse of wings, 2 inches 3 lines.

One male example, Tokei (*Fenton*).

Very near to "*Smerinthus?*" *askoldensis*, Oberthür, just published; but apparently distinct.

2. *Hyloicus davidis*, Oberth.

Primaries above greyish white, crossed at basal third by an oblique undulated fuliginous-brown line, elbowed towards the costa within the cell; a blackish streak on the inner border from the base to the oblique line; a black dot at the base of the costal border; area immediately beyond the oblique line brownish; a small white stigma at the end of the cell, connected, by a recurrent black streak, with the oblique line; two parallel undulated elbowed fuliginous lines across the disc, crossed by three longitudinal black dashes, one towards the base of each of the median interspaces, and one in the upper

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radial interspace; an irregularly dentated grey external border, limited internally at apex by a zigzag black line; secondaries fuliginous-brown; a central diffused belt and the external border darker brown; thorax greyish white; the palpi dark brown externally; head dark brown above, with blackish posterior margin; tegulæ dark brown, with black margins and white external fringe; abdomen brownish, with a blackish longitudinal dorsal line and lateral dusky spots; antennæ whitish, with the front margin red-brown; under surface pale sandy brown, wings with faint traces of the discal lines; expanse of wings, 2 inches 8 lines.

Tokei (*Fenton*); Nikko (*Maries*).

Easily distinguished from *H. caligineus* and *H. pinastri* by its broad wings and pale colouring. M. Oberthür has just forestalled this description.

CHALCOSIIDÆ.

SCHISTOMITRA, n. g.

Allied to *Chatamla*; wings very broad; primaries with rather short straight costal margin, outer margin arched, inner margin straight, nearly as long as the costal margin; all the veins well separated; costal vein terminating at the second third of costa, first and second subcostal branches emitted at some distance before the end of the cell, third and fourth branches emitted on a long footstalk from below the middle of the second branch, fifth branch emitted with the upper radial from a short footstalk at the superior angle of the cell; lower radial emitted rather nearer to the superior than to the inferior angle; disco-cellulars transverse, slightly arched; median branches all well separated at their origins; secondaries pyriform, with rather long costal margin; veins very regular, the costal vein being long, the subcostal emitting two branches from the superior angle of the cell, the radial emitted rather above the middle of the disco-cellulars, which are oblique and slightly curved; median branches well separated at their origins; submedian extending to anal angle; internal to below the middle of the abdominal margin; body stout, velvety, not extending to the anal angle of the secondaries; head small; antennæ thick and smooth, slightly denticulated along the inferior margin; palpi small; legs thick and rather short; pectus woolly. Type, *S. funeralis*.

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3. *Sehistomitra funeralis*, n. s.

♀. Black, with a very slight dark greenish gloss, markings cream-coloured; primaries with a subcostal streak from the base to the first third of the wing; a broad curved belt, its inner margin deeply incised and undulated, at the end of the cell, extending from the costal vein to near the base of the inner margin; a broad discal belt formed of eight elongated spots separated at the nervures, the first spot rather short and linear, the fourth short and nearly square; secondaries with the basal half of costal border cream-coloured; a broad belt, notched in front above the end of the cell, and nearly filling the basal half of the wing; a broad discal belt formed of eight large elongated spots separated at the nervures, the third rather shorter than the others, excepting the eighth, which is very small; collar yellow; abdomen crossed by four interrupted orange bands, anus orange; wings below paler than above, the black parts with purplish reflections; pectus with a white tuft on each side; venter orange, with four longitudinal series of black spots, the spots of the lateral series small; expanse of wings, 2 inches 5 lines.

Fusiyama, Nikko (*Maries*).

ELCYSMA, n. g.

Allied to *Agalope*, but easily distinguished by the form of the secondaries, which are stretched out at the extremities of the third median branch (which is, moreover, bifurcate), and the radial vein into a long narrow tail.

4. *Elcysma translucida*, n. s.

♂. Wings hyaline white, slightly dusky externally; veins brown; primaries with a black-edged orange belt across the base; body grey, anal appendages testaceous; antennæ black; expanse of wings, 2 inches 5 lines.

Yokohama (*H. Pryer*).

*Chalcosia caudata* of Bremer is probably an allied species of *Elcysma*, although represented with simple median branches and much shorter tail to the secondaries.

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ZYGÆNIDÆ.

5. *Syntomis erebina*, n. s.

Dark chocolate-brown; primaries with four squamose testaceous oval spots on the disc, one near the costa, two separated only by the third median branch, and the fourth on the interno-median interspace; secondaries with a large oval squamose testaceous spot just beyond the cell, and a U-shaped marking attached to a small dot on the interno-median area; head, collar, tegulæ, and abdomen glossed with dull steel-blue; abdomen banded at the base and just beyond the middle with ochreous; under surface as above, excepting that the markings of the secondaries are pale ochreous, and united into an irregular belt, and that there are three ochreous spots on each side of the basal half of the venter; expanse of wings, 1 inch 6½ lines.

One example, Tokei (*Fenton*).

Allied to *S. phegea* of Europe.

ARCTIIDÆ.

6. *Nemeophila macromera*, n. s.

Very close to *N. plantaginis* of Europe; but constantly larger, the white spot in the discoidal cell apparently never touching the costal margin, the subapical sigmoidal stripe not united to the Λ-shaped marking; the secondaries pale ochreous instead of orange, with a continuous irregular black external border; two disco-submarginal black spots, the first beyond the cell and the second larger, and uniting with the external border; a lunate spot at the end of the cell; a submedian streak from the base to the first branch of the median vein, and a second broader and longer interno-median streak; body normal; expanse of wings, 1 inch 9 lines.

Var. *leucomera*.

Differs from the ordinary form just as *N. hospita* from typical *N. plantaginis* in the snow-white colour of its secondaries.

Var. *melanomera*.

Differs from the ordinary form much as *N. matronalis* does from typical *N. plantaginis*, but differs from Freyer's first figure, to which it comes nearest, in the different form and coloration of the markings of the secondaries,

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which produce a nearly *Y*-shaped figure beyond the cell, and are snow-white instead of yellow; of course this form is considerably larger than the corresponding form of the smaller *N. plantaginis*.

Tokei (*Fenton*).

7. *Diacrisia irene*, n. s.

♂. Allied to *D. russula*, from which it differs in the total absence of black markings from both surfaces of the wings and in the brighter red colouring of the antennæ; the primaries above are also darker, being of a bright ochreous colour; expanse of wings, 1 inch 9 lines.

Tokei (*Fenton*).

8. *Rhyparioides simplicior*, n. s.

Nearly allied to *R. nebulosa*, and possibly a hybrid between that species and *R. subvaria*; it differs from *R. nebulosa* in the much more ochreous and less clouded colouring of the primaries, and the smaller and less numerous black spots on the secondaries, in which last respect it agrees well with *R. subvaria*; expanse of wings, 1 inch 10 lines.

Two males. Tokei (*Fenton*).

The receipt of a female *R. subvaria* from Japan proves it to be a *Rhyparioides*; the *R. metalkana* of Lederer also belongs to this genus, and not to *Diacrisia*.

9. *Spilarctia basilimbata*, n. s.

Allied to *S. seriatopunctata*; considerably smaller, and of a dull whitish stone-colour, the discal black dashes elongated so as to form a distinct tapering band; other spots larger; interno-median area suffused with dull olivaceous-brown; secondaries rosy greyish between the cell and abdominal margin; an additional blackish spot beyond the cell; thorax pale sordid buff, abdomen duller than in *S. seriatopunctata*; primaries below with the discal belt filled in, and forming a broad tapering band which covers nearly the whole of the interno-median area, and tapers to a point towards the apex; costal margin and cell rosy ochreous, with the usual black spots; external border broadly ochreous, with two black dots placed obliquely at about its centre; secondaries

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paler than in *S. seriatopunctata*, with the same black spot at the end of the cell, but the other spots differently placed, being in the interno-median and first median interspaces; expanse of wings, 1 inch 7 lines.

One male. Tokei (*Fenton*).

Our males of *S. seriatopunctata* measure four lines more in expanse than this species, but the whole coloration is so distinct, notwithstanding a partial agreement in the pattern, that I can hardly believe it possible for the difference to be due to variation.

10. *Spilarctia bifasciata*, n. s.

Buff-coloured, the primaries crossed at basal third by an arched and unequal macular band commencing on the costa in a cuneiform black dash which runs almost to the base; a second more uniform band, elbowed at the inferior angle of the cell, and only separated by the buff-coloured nervures just beyond the middle; this band commences in a costal dash which runs towards the apex, a rather broad internal abbreviated band uniting the two transverse bands; antennæ black; abdomen with dorsal and lateral series of black spots; under surface bright ochreous, the bands of the primaries indistinct; expanse of wings, 1 inch 11 lines.

One male. Tokei (*Fenton*).

I do not know any species nearly allied to this.

11. *Euprepia phæosoma*, Butler.

Var. *auripennis*.

Differs from the typical form in having the ground-colour of the secondaries and abdomen bright golden ochreous instead of scarlet; expanse of wings, 3 inches 1 line.

One female. Tokei (*Fenton*).

I find, from an examination of four specimens of the typical form from Nikko and two from Tokei, that the coloration of the body agrees as a rule with the European *E. caja*; the species may, however, be invariably separated from the latter by the great breadth of the oblique belt from the inner margin to the end of the cell of primaries, which, unlike that in *E. caja*, always greatly exceeds in width the band from the end of the cell to the

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external angle; the smaller black spots on the secondaries are usually, but not invariably, absent.

LITHOSIIDÆ.

12. *Miltochrista artaxidia*, n. s.

In general pattern and coloration similar to *Artaxa piperita;* it is, however, considerably smaller than that insect, and is allied to *M. humilis;* primaries bright buff-yellow; two pale grey spots placed obliquely within the cell, and on the interno-median interspace towards the base; the internal border, excepting at the base, and a broad irregular discal belt, continuous with the internal border, and not reaching the costal margin, near to which it is bifurcate, grey with slight violaceous reflections; secondaries pale creamy stramineous, with a broad greyish discal belt, much paler than that of the primaries, and diffused internally; body bright buff; under surface paler than above; expanse of wings, 1 inch.

One male specimen. Tokei (*Fenton*).

13. *Gampola noctis*, n. s.

Fuliginous-brown, without markings; primaries above with slight bronzy reflections, secondaries blacker in tint with slight purplish reflections; wings below of a uniform fuliginous-brown colour; legs and body below pale brown; expanse of wings, 1 inch.

One specimen of this very distinct species. Tokei (*Fenton*).

14. *Sinna fentoni*, n. s.

Very like *S. extrema* (*Teinopyga reticularis*, Felder), from Shanghai, but differing in the duller colouring of the reticulated lines on the primaries; these lines are also much more slender; the black spots on the apical area replaced by narrower greyish brown spots; surface of primaries less sericeous; expanse of wings, 1 inch 5 lines.

Two specimens. Tokei (*Fenton*).

15. *Sinna clara*, n. s.

Allied to the preceding, but the primaries of a clear pale sulphur-yellow tint; the basal half of these wings and the thorax crossed by slender ochreous reticulated

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lines; *no dark spots on the apical area*; abdomen and secondaries shining snow-white, without stain of any yellowish or brownish tint; expanse of wings, 1 inch 5 lines.

One perfect specimen. Tokei (*Fenton*).

The absence of the apical black or blackish spots at once distinguishes this from all the other species; it is not likely to be the female of the preceding, since this sex of *S. extrema* and *S. calospila* exhibits the same characteristic markings as in the male.

LIPARIDÆ.

16. *Chærotriche niphonis*, n. s.

♂. Greyish fuliginous; primaries above densely speckled with black and buff scales, with the costal border broadly pale buff, interrupted by a few black scales where it meets the outer border; the latter also pale buff, sparsely sprinkled with black scales; a black dot at the end of the cell; base of costa black-speckled; head and collar ochreous; antennæ blackish; thorax pale buff; abdomen brownish; wings below brown, with irregular and partly diffused pale buff costal and external borders; body below ochreous; expanse of wings, 1 inch 5 lines.

One specimen. Tokei (*Fenton*).

17. *Chærotriche squamosa*, n. s.

♀. Ochreous; primaries above; a broad almost cuneiform patch of reddish, mottled with black, filling nearly the whole space between the cell and the inner margin, but not quite extending to the base, and only touching the outer margin at external angle; a black spot at the end of the cell; extreme base white; a black spot close to the base; secondaries with a black spot at the end of the cell; under surface clear stramineous; all the wings with a black spot at the end of the cell; expanse of wings, 1 inch 9 lines.

Two females, Tokei (*Fenton*); one female, Yokohama (*Pryer*). The specimen from Yokohama has the primaries of a distinctly more yellow tint (inclining to gamboge) than the secondaries.



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18. *Orgyia approximans*, n. s.

♂. Nearly allied to *O. gonostigma*, but the wings narrower and more produced at apex; the white spots of primaries smaller, only two (instead of four to five) at apex; the ground colour of the primaries darker, so that the blackish spots are less perceptible; expanse of wings, 1 inch 4 lines.

One male. Tokei (*Fenton*).

19. *Orgyia thyellina*, n. s.

Somewhat allied to *O. trigotephras*, but much larger and darker; the primaries more produced at apex; the basal third and the internal border as far as the white lunule (which is large and prominent) testaceous, mottled with dull ferruginous or mahogany-brown; remainder of wing blackish brown, crossed just beyond the cell by a broad belt of scattered testaceous mottlings; three testaceous-bordered black spots in an oblique series above the white lunule near the external angle; three spots, of which the two upper are black, bordered with testaceous and white, in a reversed oblique series across the apical area; an indistinct marginal series of grey-edged subconfluent black spots; this series forms an elbow inwards at external angle, and consequently at that point becomes submarginal; secondaries very dark chocolate-brown; fringe with pale basal and external lines; body greyish; under surface of wings fuliginous-brown; primaries with shining whity brown internal border; body below whity brown; expanse of wings, 1 inch 3½ lines.

One male. Tokei (*Fenton*).

A very distinct species.

20. *Porthetria umbrosa*, n. s.

Of about the average size of *P. dispar* of Europe; but at once separable from that species by the diffused ill-defined character of all its markings, and the absence of the blackish dentate-sinuate discal line beyond the cell of the primaries; the externo-discal dentate-sinuate line is present, but less clearly defined; expanse of wings, male, 1 inch 10 lines to 2 inches; female, 2 inches 3 to 5 lines.

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Male and female. Tokei (*Fenton*); female, Yokohama (*Jonas*); male, Hakodate (*Whitely*).

Until the arrival of Mr. Fenton's collection, I always believed this to be a small variety of *P. japonica*, Motsch.; it appears, however, to be invariably not only much smaller, but much paler than that species; the primaries also, as compared with the secondaries, being noticeably smaller.

21. *Porthetria hadina*, n. s.

*Lymantria fumida* ♂ (nec. ♀), Butler, Ann. & Mag. Nat. Hist., ser. 4, vol. xx., p. 402 (1877).

The male of *P. fumida* proves to be very similar to the female (Ill. Typ. Lep. Het., ii., pl. xxiv., fig. 4), although naturally much smaller and darker. In accordance with the rule now followed, the fact that I figured the female as typical of the species (thus restricting the name to that form) renders it necessary for me to rename the male described in the 'Annals,' as being distinct from the true male of *P. fumida*.

*P. hadina* is referable to the *P. dispar* group, and is of about the average size of that species, but is of a decidedly blacker colour, darker even than *P. japonica*; the markings on the primaries consist of two incurved widely separated zigzag blackish lines, which limit the central third of the wing, and enclose a broad irregular diffused band of the same colour, and of a rather broad blackish border, with irregularly sinuated internal edge; the ground colour of these wings is olivaceous-brown; the secondaries are of a uniform dark brown colour; the fringes of all the wings are brown spotted with black. In some respects *P. hadina* is perhaps nearer to *P. eremita* of Europe.

22. *Porthetria lucescens*, n. s.

Allied to *P. asætria* (Hübner, Exot. Schmett., ii., pl. 178; 1806), but larger, the dots near the base replaced by a single zigzag brown line; the line which crosses the cell placed at nearly twice the distance from the two contiguous discal lines, the latter less incurved towards the base; secondaries pale shining greyish testaceous instead of yellowish white; no distinct submarginal undulated stripe, but the apical border broadly greyish; disco-cellulars grey; expanse of wings, 1 inch 9 lines.

One male. Tokei (*Fenton*).

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Although the primaries of the male *P. asætria* and of this species much resemble the species of *Lymantria*, they differ in being less produced at apex; the female of *P. asætria* also has the elongated narrow-winged character of typical *Porthetria*.

23. *Dasychira argentata*, n. s.

♂. Most nearly allied to *D. abietis* of Europe; greyish fuliginous; the primaries shining; the basal third and external border silvery whitish; the whole surface of the wing crossed much as in *D. abietis* by zigzag or undulating blackish and grey parallel lines, of which the most prominent are those limiting the basal area and the external border; disco-cellulars black and angulated as in *D. abietis*; secondaries whitish towards the base; the disco-cellulars and a broad externo-discal belt dark greyish; thorax greyish white, the collar with a greenish tint; a spot on each shoulder and a band across the metathorax black; antennæ whitish, with long rust-red pectinations; abdomen whity brown; under surface of wings whity brown, with disco-cellular spots and a discal belt grey; body almost pure white; expanse of wings, 1 inch 11 lines.

Yokohama (*H. Pryer*).

Although I have noted *D. abietis* and *D. argentata* here as species of *Dasychira*, they differ from *D. pudibunda* (the markings of which are wholly dissimilar) in their more woolly thorax, and in their thick woolly wings, in which the veins are much less conspicuous; the pattern of the primaries is of a different character; in all these points of difference they correspond to "*Teara*" *rotundata*, Wlk., of Australia, with which they may be associated as a new genus under the name of *Calliteara*.

The *Dasychira fascelina* of Europe differs in neuration from *D. pudibunda*, the difference being especially noticeable in the male sex, in which the second and third branches of the median vein of the secondaries are emitted from a long footstalk; this species and *D. leucophæa* of Georgia may be separated under the name of *Dicallomera*.

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SATURNIIDÆ.

24. *Antheræa hazina*, n. s.

♂. Allied to *A. yamamai*, but of a rusty orange colour, least red at the base, costal border and apical area of primaries; it differs also in having a well-defined ferruginous sinuated stripe half way between the ordinary stripes representing the central belt of the secondaries, close to the outer margin; again, there is a feebly sinuated dusky stripe (wanting in *A. yamamai*), and just within the discal whitish-bordered slaty-grey stripe is a well-defined more deeply sinuated dusky stripe; expanse of wings, 6 inches 5 to 7 lines.

♀. Differs from the male in being of a more flesh-brown tint, and with no trace of the submarginal dusky stripe on the wings; expanse of wings, 6 inches 5 lines.

Male and female. Yokohama (*Jonas*); male, Tokei (*Fenton*).

Whether this is or is not a seasonal form of *A. yamamai* I am unable to say, but it seems fairly common at Yokohama.

25. *Antheræa fentoni*, n. s.

Allied to the preceding, but of the colour of *A. confuci* of Moore; it differs from the latter in the possession of an interrupted whitish-edged slate-coloured stripe across the basal fourth of primaries, in the second stripe running behind (therefore interrupted by) the ocelli instead of nearer to the outer margin, in the presence of a similar stripe on the secondaries, in the discal stripe being black, and the line interior to it brown, instead of both being reddish, and in its being also much farther from the second stripe; from *S. hazina* it differs in being of a pale olivaceous-brown colour slightly tinted with pink in the male, especially towards the outer margin, in the discal stripe being dull black, and all the other stripes more or less olivaceous; the male has a subcostal streak of yellow at the base of the primaries, and the thorax just behind the collar is of the same colour; expanse of wings, male, 6 inches 3 lines; female, 5 inches 10 lines.

Tokei (*Fenton*).

Possibly a local race of *A. yamamai*.

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26. *Antheræa calida*, n. s.

This form differs chiefly from the preceding ones in its rich ruddy chocolate-colour, with a silky greyish gloss on the primaries; the markings, although similar in pattern, are much less strongly defined, with the exception of the white border to the discal stripe of the female, which is very vivid; the latter is also placed, in both sexes at a greater distance from the second stripe; expanse of wings, male, 3 inches 3 lines; female, 5 inches 5 lines.

Tokei (*Fenton*).

Whether this was taken actually in Tokei or not I have no means of judging, as Mr. Fenton had placed all his *Antheræas* together in his collection, without appending exact habitats to each specimen; in a genus like the present, in which there is throughout a great similarity of pattern even in species from widely distant localities (differing much in the form of their pupa-cases, and probably much more in their larval characters), it is singularly unfortunate that no especial attention has been paid to this important point.

27. *Antheræa morosa*, n. s.

Differs from the preceding forms in its fuliginous-brown colour, sometimes with a yellow border to the wings, and in the ill-defined character of all the dark stripes on the wings; expanse of wings, 5 inches 3 lines to 6 inches.

Tokei (*Fenton*).

Of this form Mr. Fenton only obtained males, of which he had about half a dozen; it may be a seasonal form of the preceding.

28. *Tropæa dulcinea*, n. s.

♂. Form of *T. gnoma*, excepting that the primaries are rather more elongated; most nearly allied to *T. artemis*, but differing in the absence of the white costal margin to the primaries, of the plum-coloured band at the back of the head, and of the band on the under surface of the wings; the front wings are also decidedly longer; wings pale green, white at the base, and with white internal fringes; fringe of outer margins pale

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stramineous; ocelli small, oval, stramineous, with slender linear transparent pupil, and bounded internally by a white-edged black curved litura; primaries with plum-coloured costal border; body white, back of collar plum-coloured; antennæ testaceous; expanse of wings, 5 inches 3 lines.

Male. Tokei (*Fenton*).

In a paper upon the *Sphingidæ*! published some time since by Herr Maassen, it is asserted that my *T. gnoma* owes the brown veins on its wings to rubbing, and is nothing else than *T. artemis*; I should be sorry to contradict so reliable an authority as Herr Maassen, but for the fact that the type of my species has never been examined by him; as it is, although it is true that the veins in my type *are rubbed*, and may therefore owe their *brown* colouring to this fact, I find that the female (when fresh) possesses distinctly sandy yellowish veins, the colour of which is not due to rubbing. But, in the second place, I am not aware that I laid *especial* stress upon the one character of vein-coloration; I certainly never intended to do so, for the form of the wings offers a far more important distinction between *T. gnoma* and *T. artemis;* the long narrow tails of the secondaries, common to both sexes of *T. gnoma*, are quite sufficient to separate it at a glance from *T. artemis;* but, again, Herr Maassen says that even these structural differences are not reliable, and in proof of this assertion he goes on to specify the points of difference between his examples of *Tropæa luna*. A comparison, however, of specimens of a species, so frequently reared* in confinement as *T. luna*, with those of a purely wild form must necessarily be an unfair one, since it is well known that the domestication of any animal tends greatly to increase its variability.

In the second place, Herr Maassen does not say whence the specimens which he calls *T. luna* were obtained; he does not assure us that he has seen the whole of the described forms referable to the genus, so as to be certain of the correctness of the statement that these forms (which he regards as varieties) have not been described as species; nay, on the contrary, he

* Herr Maassen implies that all his specimens are bred; he says, "Rearing has taught that all these different aberrations spring from eggs which a single female has laid."

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wisely says, "so far as I know" his words are "Es ist bis jetzt, *so viel mir bekannt*, noch Niemandem, selbst nicht einmal dem gelehrten Hrn. Grote, eingefallen, aus diesem individuellen Unterschieden der *T. Luna* Artrechte herleiten zu wollen und diverse Species daraus zu bilden."

In the third place, supposing that the whole of Herr Maassen's varieties are reared from the eggs of the same female, and therefore can without hesitation be regarded as abnormally developed sports of the same species; it will be noticed that none of them appear to differ in the form of the primaries, the whole apparently possessing the extraordinary falcate character of *T. luna*, since nothing to the contrary is noted.

Lastly, the variability of one species in a genus is no certain guide by which to measure the constancy of the others; conditions of climate may readily develop aberrations in the one case which are quite unknown in the others; even the late Mr. Hewitson, whose tendency to associate allied forms is well known, saw fit at times to limit the variability of species to such an extent as to astonish his friends, some of his species of *Ithomia* * and *Pronophila* † being distinguished by the coloration of the antennæ, or the simple addition of a single white spot on the under surface.

LASIOCAMPIDÆ.

29. *Eutricha dolosa*, n. s.

♂. Nearly allied to *E. pini*; but altogether larger, duller, and darker; primaries greyish, the band just beyond the cell grey edged with black, of nearly equal width, excepting at the first median and lower radial branches, where it is abruptly constricted; the disc beyond this band dark ferruginous, with whitish external margin in the sinuations of the external border; the black spots bounding the external border internally very ill-defined; secondaries fuliginous-brown instead of mahogany-red; the costal area and outer margin greyish; the fringe blackish brown; body fuliginous-brown; under surface fuliginous-brown; the discoidal area of the primaries and an abbreviated streak beyond

* As, for instance, *I. linda*.

† Compare *P. poesia* and *P. proerna* from Bogota.

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the cell of the secondaries dusky; expanse of wings, 2 inches 9 lines.

Male. Tokei (*Fenton*).

It appears to me that the genus *Œona* might be advantageously united to *Eutricha*; a comparison of *Œ. segregata* with the male of *Eutricha pini* will at once show their uniformity of character; the type of *Œona* (*Œ. punctata*) is the female of "*Odonestis*" *sodalis*, and identical with *O. abstersa*.

30. *Eutricha zonata*, n. s.

Allied to the preceding and to *Œ. segregata*; deep chocolate-red; primaries with a silvery white disco-cellular lunule; a broad piceous oblique central belt, bounded internally by a white bisinuated stripe, and externally by a dentate-sinuate white line, very sharply defined; a broad dark purplish brown external border, deeply bisinuated internally, and partly edged with whitish as usual; disc between the central belt and the outer border ferruginous; wings below with the basal three-fifths dark chocolate-brown, bounded externally by an abbreviated whitish streak, beyond which they are paler brown; expanse of wings, 2 inches 10 lines.

Male. Tokei (*Fenton*).

31. *Eutricha fentoni*, n. s.

Pale rosy ferruginous; primaries with the base, a bisinuated stripe immediately beyond the cell, a second dentate-sinuate stripe half way between the latter and the outer border, and the inner edge of the outer border dark ferruginous; outer border broad, and slightly darker ferruginous than the ground colour; an oblique lunate white disco-cellular spot upon a dark abbreviated streak; an interrupted diffused whitish stripe bounding the outer border internally; costal border of secondaries and body pale; antennæ with greyish brown pectinations; under surface pale sandy reddish; wings crossed by a darker reddish streak just beyond the middle; an ill-defined discal series of darker spots; primaries with the basi-internal area creamy whitish and sericeous; expanse of wings, 3 inches 2 lines.

Male. Tokei (*Fenton*).

Nearest to *E. superans*, male (*Odonestis superans*, Butl.), but evidently quite distinct.



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I find great confusion existing in the genus *Odonestis*, and without doubt several of the species referred to it will have to be placed in *Eutricha*.

32. *Pœcilocampa subpurpurea*, n. s.

♀. Primaries above purplish piceous; a faint indication of an irregular ochraceous stripe across the basal third, and of a second undulated and slightly elbowed stripe just before the external third; a whitish oblique subapical costal litura; secondaries laky brown; body testaceous; under surface uniform sericeous-greyish chocolate-colour; expanse of wings, 2 inches 11 lines.

Female. Tokei (*Fenton*).

The wings of this extraordinary species are semi-transparent; only one slightly damaged example was obtained.

NYCTEOLIDÆ.

33. *Earias roseifera*, n. s.

Primaries above apple-green, with a large central circular rose-coloured patch, enclosing two or three grey scales at the end of the cell; outer margin dark brown; fringe purplish grey; secondaries silvery grey, with white fringe; head and thorax apple-green; abdomen leaden grey; under surface leaden grey; primaries dark, with the apex and outer half of costal margin pale green; secondaries with the apex and costal margin slightly greenish; expanse of wings, 10 lines.

Tokei (*Fenton*).

Chionomera, n. g.

Allied to *Tyana*, but the outer and inner margins of the primaries more convex; the subcostal furca longer, the palpi more uniform in thickness, with longer terminal joint; the wings more glossy, of a silvery white colour, banded with orange. Type, *C. superba*, Moore.

34. *Chionomera argentea*, n. s.

Silvery white; primaries with an orange spot at the base of the costa; a transverse orange band at basal third emitting a short fork inwards upon the costal border, and edged externally with black; an oblique black-edged discal band from costa to external

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angle, emitting a short angulated fork outwards towards the costa; outer border nearly to external angle orange, edged internally with black; fringe pale yellow; antennæ legs and venter sordid white; under surface white, primaries slightly tinted with pale sulphur-yellow towards the outer margin; expanse of wings, 1 inch.

Yokohama (*Pryer*); Tokei (*Fenton*); Fusiyama (*Maries*).

Nearly allied to *C. superba*.

NOTODONTIDÆ.

35. *Triæna anædina*, n. s.

♂. Allied to *T. cuspis*, but much larger than even *T. major*; in pattern it only differs from *T. cuspis* in the more slender sagittate and ramose longitudinal streaks in the interno-median area of primaries; in coloration it corresponds with the darkest varieties of *T. cuspis*, excepting that the primaries are greyer; expanse of wings, 2 inches 8 lines.

Tokei (*Fenton*).

Our largest female example of *T. cuspis* only measures 2 inches 1 line in expanse, and our smallest male 1 inch 7 lines.

36. *Destolmia insignis*, n. s.

Greyish brown, the primaries with a barely distinguishable greenish tinge; an ill-defined angulated black line just beyond the basal third; a second arched dentate-sinuate slender black line, bordered externally with white, at external third; a slightly curved stripe upon a dark brown diffused background, running from the base through the interno-median interspace, and curving upwards at its extremity into the first median interspace; a second, but abbreviated, black stripe (upon a diffused marginal cuneiform brown patch) running from the discal line almost to the outer margin within the lower radial interspace; a small slender black dash near the costa; veins black, varied with white; secondaries with the disco-cellulars and external area slightly dusky; body slightly dusky, a black line across the front of the collar, and a black band crossing the tegulæ and thorax just behind the collar; under surface sordid sandy whitish; the wings crossed by an abbreviated greyish

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streak beyond the discoidal cells; primaries with shining internal area; secondaries with dusky discocellulars; head and pectus greyish; expanse of wings, 2 inches 3 lines.

One example. Tokei (*Fenton*).

FENTONIA, n. g.

Allied to *Thiacidas*, but differing in its much more elongated primaries and abdomen, in which respects it approaches *Cucullia* and allies. Type, *F. lævis*.

37. *Fentonia lævis*, n. s.

Primaries grey, with slight cupreous reflections, crossed at basal third by a blackish-edged zigzag white line; a second similar discal line, widely arched between the first median branch and the costal margin; between the last-mentioned line and the cell is a second slightly less arched blackish brown line; a black longitudinal line on a diffused cupreous-brown streak runs from the base to the white discal line through the interno-median interspace; external border paler than the ground colour, with a sinuated and dentated whitish inner edge; outer margin black, fringe white; secondaries whitish, with brownish abdominal area crossed by a sordid white curved discal stripe; outer border brownish, darkest at anal angle; a slender whitish submarginal line, pure white at anal angle, and a slender black marginal line; fringe white; thorax sericeous-grey, antennæ and abdomen brownish; primaries below pale greyish brown, crossed by a slightly sinuous white discal stripe; internal area sericeous; secondaries white, with cupreous reflections; faint traces of a discal line and a spot at anal angle brown; fringe spotted with brown towards the anal angle; body below white, tarsi banded with brown; expanse of wings, 1 inch 9 lines.

Yokohama. (*H. Pryer*).

38. *Drymonia permagna*, n. s.

Primaries above slaty grey, semitransparent; the base, inner margin, and a zigzag band across the disc irrorated with minute yellow scales, which give them a sap-green appearance; two yellow dots on the inner margin indicating the extremities of the two ordinary

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stripes, which are slightly darker than the ground colour, but not sharply defined; two yellow spots on the greenish discal band, one just below the first median branch, the second larger and close to the costa; disco-cellulars black, surrounded by a patch of brown irrorated with yellow scales; a white costal dot beyond the cell, and a second larger spot at external angle; fringe dark brown, spotted with yellow; secondaries greyish brown, whitish in the centre, and crossed by a slightly curved white discal stripe, which terminates at anal angle in a large sulphur-yellow spot, bounded on both sides by blackish; on the external boundary, which forms part of the outer border, there is a group of small pale blue scales; thorax dark grey, blackish in front, and sprinkled with yellow hairs, metathorax densely clothed with coarse yellow hair; abdomen reddish brown, dark grey at base, and greyish along the dorsal ridge; antennæ black; primaries below fuliginous-brown, with grey costal and external borders; a yellow subapical spot; fringe as above; secondaries pale grey, crossed by two parallel dusky stripes, and with a dusky external border; a creamy whitish anal dash; fringe black, spotted with yellow; body below dark grey, venter slightly brownish; expanse of wings, 2 inches 10 lines.

Tokei (*Fenton*).

39. *Calpe lata*, n. s.

♂. Very like *C. excavata*, but larger, broader, the external angle ending in an acute denticle; the coloration paler, the primaries being lilac and bronzy ochreous, transversely reticulated with minute golden yellowish lines and with olive-brown markings as in *C. sodalis*, the oblique discal line being bordered externally with red as in that species; secondaries pale sordid buff, crossed beyond the middle by a dusky diffused stripe and with a broad dusky discal belt; body corresponding in colour with the wings; under surface creamy buff, the primaries redder than the secondaries, and crossed beyond the middle by a very broad arched brown belt, which does not reach the margins; secondaries with a discal streak formed of elongated brownish spots; palpi and coxæ, femora and tibiæ of anterior and middle pairs of legs reddish orange, tarsi of the same legs brown; expanse of wings, 2 inches 2 lines.

Tokei (*Fenton*).

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DREPANULIDÆ.

40. *Argyris plagiata*, n. s.

Apparently nearest to *A. ocellata;* sericeous-white, primaries with an extremely large golden bronze-coloured patch, with slaty grey centre bounded externally by four oval black spots, and partly crossed also by a curved white line on the disco-cellulars; a smaller spot of golden-bronze enclosing grey and white dots on internal area; an arched discal series of dome-shaped grey spots followed by submarginal and marginal series of elongated spots of the same colour; secondaries almost crossed in the centre by two large confluent golden-bronze patches enclosing large spots of grey, bordered with plumbageous and black; an ill-defined arched bronzy discal stripe followed by two series of grey spots, the inner series of rather large diamond-shaped spots, the outer of narrow subconfluent dashes, almost forming a submarginal line; head black in front; under surface entirely sericeous-white; expanse of wings, 1 inch 10 lines.

One rather damaged specimen. Tokei (*Fenton*).

ZENZERIDÆ.

41. *Zenzera leuconotum*, n. s.

♀. Closely allied to *Z. æsculi* of Europe, but decidedly larger, and with unspotted snow-white prothorax; expanse of wing, 3 inches 1 line.

Tokei (*Fenton*).

PSYCHIDÆ.

42. *Eumeta minuscula*, n. s.

♂. Sericeous fuliginous-brown, the wings with a faint rosy reflection; veins of primaries, especially the main stem of the submedian, broadly blackish; body darker than the wings; under surface nearly as above, but the veins more slenderly blackish; expanse of wings, 11 lines.

Yokohama (*H. Pryer*).

PLATEUMETA, n. g.

Wings short and broad (somewhat like *Psyche graminella*, but of a thicker texture); thorax very broad and

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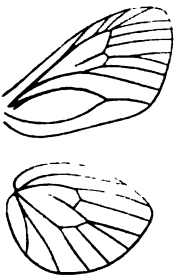
robust, abdomen extending for two-fifths of its length beyond the secondaries; antennæ short and broadly pectinated; costal vein of primaries extending to beyond the middle of the margin; subcostal four-branched, the first two branches emitted before the end of the cell, the third and fourth from one point at the superior angle of the cell; two radials emitted from the upper disco-cellular, which is oblique, lower disco-cellular angulated, and emitting a short recurrent vein into the cell; median vein four-branched, the third branch being forked at about one-third of its length from the cell; submedian widely looped at its commencement, but terminating in a simple vein, secondaries with the costal vein normal, the subcostal arched, emitting one branch almost parallel to the radial vein; disco-cellular veinlet rectangular, emitting rather a long recurrent vein into the cell; median vein four-branched, the third and fourth branches emitted from one point at the inferior angle of the cell; submedian and internal veins normal. Type, *P. aurea.*



43. *Plateumeta aurea*, n. s.

♂. Body dark fuliginous-brown; wings shining golden copper-brown, changing to fuliginous in the shade; more intensely golden below than above; the costal border of secondaries above and the internal border of primaries below sericeous-greyish; expanse of wings, 1 inch 1 line.

Yokohama (*H. Pryer*).

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## II. *Notes on* Odonata, *of the subfamilies* Corduliina, Calopterygina, *and* Agrionina (*Légion* Pseudostigma), *collected by* Mr. Buckley, *in the district of the Rio Bobonaza, in Ecuador*. By R. M'Lachlan, F.R.S., &c.

[Read February 2nd, 1881.]

In 1878 this Society did me the honour to publish (Trans. Ent. Soc. Lond., 1878, pp. 85—94) a short paper on *Odonata*, of the subfamily *Calopterygina*, collected by Mr. Clarence Buckley, chiefly at Intaj (or Intac) in Northern Ecuador. Upon his return to England last year, I obtained from him a considerable collection of *Odonata*, many of them most interesting and certainly new. These came from the district of the Rio Bobonaza, a tributary of the Rio Pastaza, and situated in the forest region east of the Andes. The effect of differing local conditions is most markedly shown in this latter collection, for in the *Calopterygina* (and also in other subfamilies) scarcely any of the species forwarded in the former small collection are represented in the present larger one.

It is at present not possible for me to give an analysis of the whole of the collection, and I have restricted the subject of this paper to the groups mentioned in the heading.

It will be noticed that a not inconsiderable number (considering the amount of materials) of new forms are described, and some of them are of great beauty. With regard to some of the *Calopterygina* a well-known, and ever-increasing, difficulty asserts itself, viz., that of deciding what should constitute a species, and what a "race" or variety. The insects of this subfamily prove themselves especially plastic, so far as local modifications are concerned, and it is highly probable that each elevated valley of the mountainous regions of tropical America may possess its own peculiar form of one root-species, if I may be allowed the term, just as has been already noticed in butterflies, although the aquatic habits of dragonflies in their preparatory stages do not so greatly isolate them. The beautiful genus *Thore*, is



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strongly illustrative of this tendency to run into local forms, and in it (as in many other *Calopterygina*) the radical test of different structure in the anal parts can hardly be applied, so we are left with colour and markings as the chief guides. Another frequent difficulty is that of pairing the sexes, and one that is likely to remain, unless local observers make records on the spot.

CORDULIINA.

*Gomphomacromia Batesi*, Selys.

I have five males and one female before me. It is only in the very adult males that the wings are slightly tinged.

The following are the indications of the hitherto undescribed female:—Length of abdomen, 35 mm.; length of posterior wing, 35½ mm.; expanse, 74 mm.

Abdomen cylindrical, slightly swollen at the base, not dilated at the apex; the ventral margins of segments 6—8 narrowly yellow; 10th segment very short. Appendages conical, pointed, nearly as long as the 9th segment. Vulvar scale shorter than the 9th segment, broad, divided to the base in its middle by a narrow triangular excision.

*G. Batesi* was originally discovered by Mr. Bates at St. Paulo, on the Upper Amazons.

N.B.—The four described species of *Gomphomacromia* form a somewhat heterogeneous assemblage, as constituting a single genus or subgenus.

CALOPTERYGINA.

*Lais Devillei*, Selys.

Of this species (described in Compt. Rend. Soc. Ent. Belg., xxiii., p. l, 1880) there are four males in the collection. It is probable that three females also belong here, but the difficulty in pairing the sexes in *Lais* is not easy when more than one species is known from the same locality. It was originally described from Baisa (Ecuador); I have it also from the Rio Napo (not "Pérou oriental?" as indicated by de Selys).

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*Lais metallica*, Selys.

Four males and one female apparently pertain to this species. They are larger (length of abdomen, male, 41—43 mm.; length of posterior wing, male, 29—30 mm.) than the typical example; the number of antecubital nervules varies from twenty-three to twenty-eight.

These examples are very adult; there are no humeral lines on the thorax, and only two narrow and almost obliterated lateral lines (compare the original description in the 'Secondes Additions aux Calopt.,' p. 11, 1869). The posterior wings have a distinct fuscous apical spot, but not so distinctly forming a "gouttelette" as in *Devillei*, *Hauxwelli*, &c. The superior appendages are similar to those of the typical examples; the inferior appendages are short, thick, and cylindrical, directed inward, very obtuse, the apex with a tuft of curled hairs.

It should be noted that the original male types were probably immature, and the locality (given as Bahia or Guiana?) somewhat uncertain.

I submitted a male to M. de Selys, who thinks my identification probably correct; but he remarks that, according to these examples, *metallica* should be placed in the same section with *Devillei*, *Hauxwelli*, &c. (*cf.* Compt.-Rend. Soc. Ent. Belg., xxiii., p. li.).

*Hetærina caja*, Drury.

Three adult males. They have the red portion at the base of the wings more extended, and the red spot at the apex of the posterior wings larger, than in an example from Venezuela given to me by de Selys.

With these males were four adult females, which, as no other male *Hetærina* was in the collection, I refer here (notwithstanding that M. de Selys inclines to consider them *sanguinea*). These have the wings strongly and uniformly tinged with yellowish, and the neuration is wholly brownish (with a reddish tinge), excepting the costa.

*Thore derivata*, n. s.

♂. Adult. The black terminal portion of the wings commences at about the last fifth of the distance between the nodus and the pterostigma (thus occupying less than

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one-fifth of the entire wing); it is preceded by a milky band, as is usual.

♀. Adult. The black band commences as in the male, and occupies the entire apex of the wings, excepting a terminal vestige (1½ mm. long), which is paler (in very adult examples this vestige probably disappears, leaving the wings coloured as in the male).

Size variable. Length of abdomen, male, 41—50 mm.; female, 35 mm. Length of posterior wing, male, 34—42 mm.; female, 37 mm. I have six males and two females before me.

Allied to *picta*, but in the latter the black terminal portion of the wings in the male commences about the last third of the distance between the nodus and the pterostigma (thus occupyiug more than one-fourth of the entire wing); and in the female there is a black band, commencing as in the black apex of the male, but terminating at the origin of the pterostigma, thus leaving a large apical hyaline space.

*T. derivata* might be considered a race of *picta*, Rbr. (*Saundersii*, Selys), but the much less extension of the dark apex of the wings in the male, and the great difference in the female, appear to entitle it to specific rank.

*Thore æquatorialis*, Selys?

Two immature females resemble those noticed by me in Trans. Ent. Soc. Lond., 1878, p. 90, but the opaque band is very visible on both pairs of wings.

It should be remembered that in the typical examples of *æquatorialis*, which is very adult, the opaque band is scarcely evident; then, supposing all these examples to pertain to the same species, the band becomes less distinct, according to the time the insect has been flying, which is rather opposed to what we find in other instances.

Also it should be remarked that no male insect is known which can be paired with these females.

*Thore concinna*, n. s.

Bronzy black; head, thorax, and base of abdomen marked with the spots and lines usual in the genus, and reddish orange in colour. Pterostigma dark brown in black veins, somewhat dilated, 4—4¾ mm. long, surmounting 10—17 cellules; 41—58 ante-cubital nervules, and 58—68 post-cubital in the anterior wings.

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♂. Adult. Both pairs of wing totally brilliant shining reddish cupreous (very slightly paler at the extreme base), iridescent, transparent, and without markings of any kind; neuration reddish, the costal vein blackish up to the nodus. Legs dark piceous; the femora brown internally. Appendages as is usual in the genus; the apical portion slender.

♂. Immature. Paler. The cupreous tint of the wings is wanting, and they are almost golden. Pterostigma pale greyish brown in yellowish veins. Neuration yellowish; the costal vein blackish.

♀. Adult. The wings tinged as in the male, but the colour is less brilliant. Slightly beyond the nodus is a transverse, somewhat narrow, opaque band (scarcely reaching the inner margin), brownish ochreous in colour, somewhat cuneiform, nearly straight (but oblique) in the anterior wings, slightly curved in the posterior.

Length of abdomen, male, 34—44 mm.; female, 29—31 mm. Length of posterior wing, male, 30—40 mm.; female, 29—30 mm. Expanse, male, 65—86 mm.; female, 63—66 mm.

Fifteen males and four females.

This beautiful species is certainly the most remarkable of the genus, in consequence of the brilliant cupreous tinge of the wings, which in the male have no markings of any kind, the opaque band appearing only in the female.

N.B.—There is a single very immature female in the collection that I refer to *concinna* with doubt. The wings are pale shining fuliginous, and the opaque band is pure white and less cuneiform; the pterostigma cinereous.

*Thore mutata*, n. s.

Very closely allied to *T. Aurora*, Selys (of the Rio Napo); differs as follows:—

The pterostigma is slightly longer and narrower (less dilated). The thoracic lines narrower and less bright.

♂. Adult. The band on the fore wings never acquires the reddish orange tint of the adult of *T. Aurora*, but remains milky opaque white, as in the immature condition of that species; moreover, the band is never succeeded by a dark coloration of the membrane (the most

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that can be said is that the membrane generally has the slightest fuliginous tinge), which is indicated even in immature examples of *T. Aurora*; in effect, both pairs of wings in *mutata* are as in the posterior pair of *beata*.

♂. Immature. Pterostigma very pale brown (instead of deep black); the membrane of the wings limpid, the opaque white band less distinct.

♀. Adult. The wings slightly tinged; opaque bands as in the adult female of *T. Aurora*, but in the anterior wings the colour is yellowish ochreous, and in the posterior brownish ochreous both above and beneath; the opaque bands neither preceded nor succeeded by dark bands.

Length of abdomen, male, 31—35 mm.; female, 29 mm. Length of posterior wing, male, 28—30 mm.; female, 29 mm. Expanse, male, 55—60 mm.; female, 60 mm.

I have received eight males and one female. This and *T. Aurora* can only be considered representative species, one of the other. That most of the males of *T. mutata* are perfectly adult is proved by the deep black pterostigma, and a very adult female is still less like the parallel condition in *T. Aurora*.

*T. Batesi*, *Aurora*, *mutata*, and *beata* form a group of comparatively small-sized species, in which the pterostigma is notably shorter in proportion than in the others of the genus.

### *Cora jocosa*, n. s.

Belonging to Group 1 of de Selys (Troisièmes Additions, Calopt., p. 38), in which the nodus is placed midway between the base and apex of the wings. Pterostigma black, not dilated, surmounting 6 cellules, 2½ mm. long. 26 ante-cubital nervures, and 19 post-cubital, in the anterior wings. No sector interposed between the 1st and 2nd sectors of the triangle; the 2nd sector regularly and longly bifurcate.

♂. Adult. Wings very slightly tinged with olivaceous, more especially on the anterior margin.

Labrum and rhinarium yellowish, as are also the frontal eye-margins, face otherwise black. Top of the head black, with four round orange-coloured (or the posterior pair probably bluish in life) spots placed in a quadrangle. Prothorax pale blue. Thorax with a

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dorsal median black line dilated at each end, and enclosing posteriorly two pale spots; an ante-humeral black line indicated by a large elongate oval spot; the humeral line rather broad posteriorly, but becoming very slender; the sides with three black lines, of which the first two become confluent towards the legs; inter-alar portion black, spotted with pale blue. Abdomen black; the upper side of the first six segments pale blue, with black sutures, and on the 2nd to 6th there is a triangular black expansion near the posterior end of each. Legs black; the femora brownish internally at their base.

♀. Unknown.

Length of abdomen, 32 mm. Length of posterior wing, 26 mm. Expanse, 57 mm.

The neuration is more simple than in any other known species of the genus.

N.B.—A species from Brazil, *C. brasiliensis*, Hagen, has never been described.

## AGRIONINA.

### Légion *Pseudostigma*.

The following species of this Légion were found by Mr. Buckley:—

#### *Anomisma abnorme*, M'Lach.

*A. abnorme*, M'Lach., Ent. Month. Mag., vol. xiv., p. 87, male; *Microstigma terminatum*, Id., *l.c.*, female.

As already noticed, the type specimen from which I described *M. terminatum* is much mutilated, and the base of the wings wanting; from this cause I did not recognise it as the female of *A. abnorme*, which it certainly is.

I have now fifteen individuals of both sexes before me. In fully adult examples the dark band preceding the opaque yellow apex of the anterior wings is somewhat broader than in the less adult typical male specimen, and it is darker. In immature examples of both sexes this dark band is scarcely indicated. In the female the small white spot at the apex of the posterior wings is liable to become obsolete in fully adult examples.

The normal number of nervules in the quadrilateral is two in both pairs of wings; there are never less than two, and very rarely three.

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In both sexes the apical portion of the abdomen is wholly bronzy black. In the male the 10th segment above has a deep triangular excision; superior appendages rather shorter than the 10th segment, black, flattened, and triangular, broad at the base, but the apex produced into a slender acute point; inferior appendages scarcely longer, stout, curved upward and inward, yellowish externally, the apex subacute. In the female the margin of the 10th segment is excised as in the male; the appendages are slightly shorter than the segment, black, conical, and subacute.

The size varies as follows:—Length of abdomen, male, 56—61 mm.; female, 61—68 mm. Length of posterior wing, male, 44—52 mm.; female, 45—52 mm. Expanse, male, 86—111 mm.; female, 97—109 mm.

The locality for the original examples, both male and female, should be Rio Napo, Ecuador (not "East Peru" as stated).

*Anomisma* should probably head the Légion *Pseudostigma*.

*Microstigma rotundatum*, Selys, race *exustum*, Selys.

Very common; varying much in size.

*Mecistogaster Jocaste*, Hagen, race *sincerus*, M'Lach.

One female (Cf. Ent. Month. Mag., vol. xiv., p. 88). The female previously alluded to as from "East Peru (?)" is really from the Rio Napo. I have not yet seen the male, which would probably decide the question as to whether *sincerus* should be considered a "race" of *Jocaste* or a distinct species. It should be noticed that in *sincerus* the humeral line is double, the two lines having their origin in an opposed sense (a vestige of the upper line is to be seen in *Jocaste*). In the examples from Pebas and the Rio Napo both lines are nearly complete; in that from the Rio Bobonaza the upper line is scarcely more than one-third the length of the lower (the latter being complete).

*Mecistogaster Buckleyi*, n. s.

Wings hyaline; reticulation of both pairs scarcely complicated at the extremity. Pterostigma of the anterior consisting of 5—7 cellules in the costal area only. Posterior without pterostigma.

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♂. Adult (or semi-adult?). Wings having the slightest possible tinge of brownish; the inner margin commencing beyond the level of the arculus. Anterior without any opaque apical space; the pterostigma dark brown (but the margins of the nervules narrowly hyaline). Posterior with a small (4 mm. broad) milky-white (or yellowish) opaque apical space, in which the costal margin is slightly dilated.

Neuration of both pairs black; whitish in the apical space of the posterior. Head black above (in one example the epistoma and the front of the head are wholly greenish, and the labrum yellowish; in the other the epistoma is black, and the labrum very dark olivaceous, with a narrow yellow anterior margin). Prothorax black, with a very narrow pale yellow margin, and a greenish yellow lateral spot on either side. Thorax black; a narrow yellow dorsal line; two greenish yellow humeral lines having their origin in an opposed sense, the upper very short, and scarcely overlapping the lower; sides and beneath yellow; a black lateral line not extending to the posterior legs; no pectoral line, but only two small black spots, one anteriorly, the other posteriorly. Abdomen bronzy black, with a narrow yellow lateral line extending the whole length (or to the 6th segment only); 8th, 9th, and 10th segments bluish (wholly or in part) above, the 8th scarcely longer than the 9th. Appendages black, as long as the 10th segment, stout, curved regularly inward at the tips. Legs yellow; a line on the femora externally and on the tibiæ internally, and the tibiæ totally, black.

♀. Unknown.

Length of abdomen, male, 58—65 mm. Length of posterior wing, 44—48 mm. Expanse, 91—98 mm.

This species is perhaps most nearly allied to *M. astictus* (of which I described the male in the Ent. Month. Mag., vol. xiv., p. 88). It differs especially in only the posterior wings having an opaque apical space, and in the presence of a pterostigma in the anterior (in *astictus* the male has no opaque apical space in either pair, and the pterostigma is scarcely indicated; the female has the apex of both pairs milky, and no pterostigma); also in the absence of a pectoral black line; in the shortness of the 8th segment of the abdomen, &c. Differs from *Jocaste*, and its race (?) *sincerus*, in there being no dark



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band preceding the opaque apical space in the posterior wings. I have seen two males.

*Mecistogaster linearis*, Fab.

Many examples of both sexes, presenting remarkable variations in pterostigmatical conditions.

*Mecistogaster Marchali*, Rambur.

Several examples.

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## III. *A List of the* Hymenoptera *of New Zealand* By W. F. Kirby, Assistant in the Zoological Department, British Museum.

[Read February 2nd, 1881.]

A short time ago Mr. H. W. Marsden, of Gloucester, placed in my hands for examination a small collection of *Hymenoptera*, formed by Mr. W. J. Skelton, of Blenheim, New Zealand, and this has led to my compiling the present list.

The only lists of New Zealand *Hymenoptera*, which have hitherto appeared, are those published in 1846 in Dieffenbach's work; and in 1874, by Professor Hutton, in the 'Transactions of the New Zealand Institute,' vol. vi. In the former work only six species are mentioned; in the latter only twenty-three. The late Mr. F. Smith, who has described nearly all the *Hymenoptera* known from New Zealand at present, alludes to sixty-eight species as known to him at the end of 1877, when he read his last paper on the subject (Trans. Ent. Soc., 1878, pp. 1—7). He does not, however, enumerate them; and I therefore thought it would be useful to publish as complete a list as I could prepare. It brings up the total number to eighty-one species (including the very doubtful *Ophion luteus*), an absurdly small total when we consider that we have from 3000 to 4000 species of *Hymenoptera* in Britain alone; the *Hymenoptera* being probably the most extensive of all the orders of insects, except, perhaps, the *Diptera*. As I can only regard this list as indicating the present extent of our ignorance of New Zealand *Hymenoptera*, I avoid entering into any generalisations whatever, and have confined myself to describing five conspicuous forms as new, and have refrained from describing any obscure species. I have added the descriptions of the few species described from New Zealand by Fabricius and Walker, as their works are not so generally accessible as those of other writers on New Zealand *Hymenoptera*.

The following is a brief abstract of the species noticed in this list:—



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| | Species |
|---|---|
| ANDRENIDÆ | |
| Leioproctus | 1 |
| Lamprocolletes | 2 |
| Dasycolletes | 4 |
| Prosopis | 5 |
| Halictus | 2 |
| POMPILIDÆ | |
| Priocnemis | 8 |
| LARRIDÆ | |
| Tachytes | 3 |
| Pison | 2 |
| NYSSONIDÆ | |
| Gorytes | 1 |
| CRABRONIDÆ | |
| Rhopalum | 3 |
| THYNNIDÆ | |
| Rhagigaster | 1 |
| FORMICIDÆ | |
| Formica | 2 |
| PONERIDÆ | |
| Ponera | 1 |
| Amblyopone | 1 |
| MYRMICIDÆ | |
| Orectognathus | 2 |
| ATTIDÆ | |
| Aphænogaster | 1 |
| Tetramorium | 2 |
| Monomorium | 1 |
| ICHNEUMONIDÆ: | |
| ICHNEUMONIDES | |
| Ichneumon | 12 |
| CRYPTIDES | |
| Cryptus | 1 |
| Mesostenus | 1 |
| OPHIONIDES | |
| Ophion | 6 |
| Paniscus | 1 |
| Scolobates | 2 |
| TRYPHONIDES | |
| Mesoleptus | 1 |
| Tryphon | 1 |
| PIMPLIDES | |
| Rhyssa | 1 |
| Lissonota | 2 |
| BRACONIDÆ | |
| Rhogas | 1 |
| EVANIIDÆ | |
| Fœnus | 2 |
| CHALCIDIDÆ | |
| Eupelmus | 1 |
| Pteromalus | 2 |
| PROCTOTRUPIDÆ | |
| Proctotrupes | 1 |
| DIAPRIIDÆ | |
| Spilomicrus | 1 |
| Diapria | 1 |
| XIPHYDRIIDÆ | |
| Brachixiphus | 1 |
| TENTHREDINIDÆ: | |
| SELANDRIINÆ | |
| Monostegia | 1 |
| | 81 |

# ACULEATA.

## ANTHOPHILA.

### ANDRENIDÆ.

1. *Leioproctus imitatus.*

*Leioproctus imitatus*, Smith, Cat. Hym. Ins. B. M., i., p. 9 (1853).

New Zealand (*Churton*); Australia.—B. M.

2. *Lamprocolletes fulvescens.*

*Lamprocolletes fulvescens*, Smith, Trans. Ent. Soc., 1876, p. 486.

Canterbury (*Wakefield*).—B. M.

3. *Lamprocolletes obscurus.*

*Lamprocolletes obscurus*, Smith, Cat. Hym. Ins. B. M., i., p. 11 (1853).

New Zealand (*Hutton's List*); Van Diemen's Land.—B. M.

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4. *Dasycolletes hirtipes.*

*Dasycolletes hirtipes*, Smith, Trans. Ent. Soc., 1878, p. 7.

Otago (*Hutton*).—B. M.

5. *Dasycolletes vestitus.*

*Dasycolletes vestitus*, Smith, Trans. Ent. Soc., 1876, p. 485.

Wellington (*Wakefield*).—B. M.

6. *Dasycolletes purpureus.*

*Dasycolletes purpureus*, Smith, Cat. Hym. Ins. B. M., i., p. 15 (1853).

New Zealand (*Churton*).—B. M.

7. *Dasycolletes metallicus.*

*Dasycolletes metallicus*, Smith, Cat. Hym. Ins. B. M., i., p. 15 (1853).

*Andrena trichopus* (White), Voy. Erebus & Terror, Ins., pl. vii., fig. 12 (1874).

New Zealand.—B. M.

8. *Prosopis agilis.*

*Prosopis agilis*, Smith, Trans. Ent. Soc., 1876, p. 484.

Canterbury (*Wakefield*).—B. M.

9. *Prosopis relegatus.*

*Prosopis relegatus*, Smith, Trans. Ent. Soc., 1876, p. 485.

Canterbury (*Wakefield*).—B. M.

10. *Prosopis capitosus.*

*Prosopis capitosus*, Smith, Trans. Ent. Soc., 1876, p. 485.

Canterbury (*Wakefield*).—B. M.

11. *Prosopis lævigata.*

*Prosopis lævigata*, Smith, Cat. Hym. Ins. B. M., ii., p. 420 (1854).

Auckland (*Bolton*).—B. M.

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12. *Prosopis vicina.*

*Prosopis vicina*, Sichel, Reise d. Novara, Hym., p. 143 (1867).

Auckland (*Voy. Novara*); Tasmania (*Sichel*).

Several species nearly allied to this have been described from Australia by Smith; no other New Zealand species has a yellow scutellum and post-scutellum.

13. *Halictus sordidus.*

*Halictus sordidus*, Smith, Cat. Hym. Ins. B. M., i., p. 56 (1853).

Auckland (*Bolton*).—B. M.

14. *Halictus familiaris.*

*Halictus familiaris*, Smith, Trans. Ent. Soc., 1876, p. 486.

Canterbury (*Wakefield*).—B. M.

## FOSSORES.

### POMPILIDÆ.

15. *Priocnemis monachus.*

*Pompilus monachus*, Smith, Cat. Hym. Ins. B. M., iii., p. 164 (1855).

New Zealand (*Churton*).—B. M.

16. *Priocnemis carbonarius.*

*Pompilus carbonarius*, Smith, Cat. Hym. Ins. B. M., iii., p. 162 (1855).

Auckland (*Bolton*).—B. M.

17. *Priocnemis nitidiventris.*

*Priocnemis nitidiventris*, Smith, Trans. Ent. Soc., 1878, p. 6.

Otago (*Hutton*).—B. M.

18. *Priocnemis diligens.*

*Priocnemis diligens*, Smith, Trans. Ent. Soc., 1876, p. 483, pl. iv., fig. 3.

Peel Forest (*Wakefield*).—B. M.

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19. *Priocnemis Wakefieldii*, n. s.

Dark shining mahogany; legs rufous; antennæ more or less blackish, especially towards the extremity; face within the eyes, metathorax (which is large, raised, and hexagonal, being truncated before and behind, and angulated outwards at the sides), collar (very narrowly) and more or less of the sides of the pectus covered with a bright golden pile; wings golden yellow, with ferruginous nervures, and slightly clouded towards the extremities. The male is smaller, with the golden pile much duller; the mesothorax round the scutellum, and the middle of the pectus are blackish. Exp. al. 9—15 l.; long. corp. 4½—7 l.

New Zealand (*Wakefield*).—B. M.

A common species, mistaken by Mr. Smith for *P. fugax*, Fabr.

20. *Priocnemis fugax.*

*Sphex fugax*, Fabr. Syst. Ent., p. 350, n. 27 (1775).

*Priocnemis maculipennis*, Smith, Trans. Ent. Soc., 1876, p. 482.

"S. thorace tomentoso, aureo, abdomine ferrugineo, alis flavescentibus; fascia fusca.

"Habitat in Nova Zelandia. *Mus. Banksianum.*

"Medius. Antennæ porrectæ, nigræ. Caput et thorax tomento aureo tecta. Abdomen obscure ferrugineum, immaculatum. Alæ flavescentes, anticis fascia media dentata fusca, apice subhyalinæ. Pedes ferruginei." (*Fabr.*) Exp. al. 10—14 l.; long. corp. 5—8 l.

New Zealand (*type*).—B. M.

21. *Priocnemis marginatus.*

*Priocnemis marginatus*, Smith, Trans. Ent. Soc., 1876, p. 483, pl. iv., fig. 2.

South Island, west coast (*Wakefield*).—B. M.

22. *Priocnemis conformis.*

*Priocnemis conformis*, Smith, Trans. Ent. Soc., 1876, p. 482.

New Zealand (*Wakefield*).—B. M.

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LARRIDÆ.

23. *Tachytes nigerrimus.*

*Tachytes nigerrimus*, Smith, Cat. Hym. Ins. B. M., iv., p. 302 (1856).

*Astata nigerrima* (White), Voy. Erebus & Terror, Ins., pl. vii., fig. 14 (1874).

New Zealand (*Churton*).—B. M.

24. *Tachytes sericops.*

*Tachytes sericops*, Smith, Cat. Hym. Ins. B. M., iv., p. 302 (1856).

New Zealand.—B. M.

25. *Tachytes depressus.*

*Tachytes depressus*, Saussure, Reise d. Novara, Hym., p. 69 (1867).

New Zealand (*Saussure*).

26. *Pison morosus.*

*Pison morosus*, Smith, Cat. Hym. Ins. B. M., iv., p. 317 (1856).

New Zealand (*Wakefield*).—B. M.

27. *Pison tuberculatus.*

*Pison tuberculatus*, Smith, Trans. Ent. Soc., 1869, p. 296.

Auckland (*Bolton*).—B. M,

NYSSONIDÆ.

28. *Gorytes carbonarius.*

*Gorytes carbonarius*, Smith, Cat. Hym. Ins. B. M., iv., p. 366 (1856).

New Zealand (*Churton*).—B. M.

CRABRONIDÆ.

29. *Rhopalum carbonarium.*

*Crabro carbonarius*, Smith, Cat. Hym. Ins. B. M., iv., p. 424 (1856).

*Rhopalum carbonaria*, Smith, Trans. Ent. Soc., 1876, pl. iv., fig. 7.

New Zealand (*Churton*).—B. M.

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30. *Rhopalum perforator.*

*Rhopalum perforator*, Smith, Trans. Ent. Soc., 1876, p. 483.

New Zealand (*Wakefield*).—B. M.

31. *Rhopalum albipes.*

*Rhopalum albipes*, Smith, Trans. Ent. Soc., 1878, p. 7.

Otago (*Hutton*).—B. M.

THYNNIDÆ.

32. *Rhagigaster novaræ.*

*Rhagigaster novaræ*, Saussure, Reise d. Novara, Hym., p. 112 (1867).

New Zealand (*Saussure*).

HETEROGYNA.

FORMICIDÆ.

33. *Formica advena.*

*Formica advena*, Smith, Trans. Ent. Soc. (3), i., p. 53 (1862).

Port Littleton (*Smith*).

34. *Formica zealandica.*

*Formica zealandica*, Smith, Trans. Ent. Soc., 1878, p. 6.

Otago (*Hutton*).—B. M.

PONERIDÆ.

35. *Ponera castanea.*

*Ponera castanea*, Mayr, Reise d. Novara, Form., p. 69 (1865), Smith, Trans. Ent. Soc., 1876, p. 489.

[Auckland (*Mayr*)] Tairua, near Mercury Bay, N. Island (*Brown*).—B. M.

36. *Amblyopone cephalotes.*

*Amblyopone cephalotes*, Smith, Trans. Ent. Soc., 1876, p. 490.

Auckland (*Lawson*).—B. M.

MYRMICIDÆ.

37. *Orectognathus antennatus.*

*Orectognathus antennatus*, Smith, Trans. Ent. Soc. (2), ii., p. 228, pl. xxi., fig. 9 (1854).

New Zealand.—B. M.



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38. *Orectognathus perplexus.*

*Orectognathus perplexus*, Smith, Trans. Ent. Soc., 1876, p. 491.

Tairua (*Brown*).—B. M.

ATTIDÆ.

39. *Aphænogaster antarctica.*

*Atta antarctica*, Smith, Cat. Hym. Ins. B. M., vi., p. 167 (1858).

*Formica antarctica* (White), Voy. Erebus & Terror, Ins., pl. vii., fig. 13 (1874).

Auckland (*Sinclair*).—B. M.

40. *Tetramorium nitidum.*

*Tetramorium nitidum*, Smith, Trans. Ent. Soc., 1876, p. 480.

New Zealand (*Wakefield*).—B. M.

41. *Tetramorium striatum.*

*Tetramorium striatum*, Smith, Trans. Ent. Soc., 1876, p. 481.

West Coast of South Island (*Wakefield*).—B. M.

42. *Monomorium fulvum.*

*Monomorium fulvum*, Mayr, Reise d. Novara, Form., p. 93, pl. iii., fig. 25 (1865).

Auckland (*Mayr*).

## PUPIVORA.

### ICHNEUMONIDÆ.

ICHNEUMONIDES.

43. *Ichneumon decoratorius.*

*Ichneumon decoratorius*, Fabr., Syst. Ent., p. 333, n. 32 (1775).

Exp. al. 7 l.; long. corp. 3 l.

"I. scutello flavo, ferrugineus, abdominis ultimo segmento fascia atra.

"Habitat in Nova Zelandia. *Mus. Banksianum.*

"Parvus. Antennæ porrectæ, nigræ. Corpus totum obscure ferrugineum, scutello flavo. Alæ hyalinæ, subflavescentes."

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New Zealand (*type*).—B. M.

The type in the Banksian Collection is the only specimen in the British Museum cabinets at present.

44. *Ichneumon sollicitorius.*

*Ichneumon sollicitorius*, Fabr., Syst. Ent., p. 332, n. 30 (1775).

Exp. al. 11 l.; long. corp. 6 l.

"I. scutello flavo, thorace immaculato, abdominis segmento primo, secundo, tertioque rufis.

"Habitat in Nova Zelandia. *Mus. Banksianum.*

"Antennæ porrectæ, nigræ. Caput nigrum, fronte flava. Thorax niger, immaculatus. Abdomen atrum, primis tribus segmentis rufis. Pedes rufi."

New Zealand (*type*).—B. M.

45. *Ichneumon lotatorius.*

*Ichneumon lotatorius*, Fabr., Syst. Ent., p. 330, n. 18 (1775).

Exp. al. 11 l.; long. corp. 6 l.

"I. scutello flavicante, thorace maculato, abdominis segmento secundo rufo.

"Habitat in Nova Zelandia. *Mus. Banksianum.*

"Antennæ convolutæ, totæ nigræ. Thorax niger, puncto flavo sub alis. Scutellum flavum. Abdomen atrum, nitidum, segmento secundo toto rufo. Pedes rufi."

New Zealand (*type*).—B. M.

46. *Ichneumon deceptus.*

*Ichneumon deceptus*, Smith, Trans. Ent. Soc., 1876, p. 477.

New Zealand (*Wakefield*).—B. M.

47. *Ichneumon exhilaratus.*

*Ichneumon exhilaratus*, Smith, Trans. Ent. Soc., 1876, p. 477.

New Zealand (*Wakefield*).—B. M.

48. *Ichneumon consanguineus.*

*Ichneumon consanguineus*, Smith, Trans. Ent. Soc., 1876, p. 476.

New Zealand (*Wakefield*).—B. M.

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49. *Ichneumon insidiator.*

*Ichneumon insidiator*, Smith, Trans. Ent. Soc., 1876, p. 476.

New Zealand (*Wakefield*).—B. M.

50. *Ichneumon placidus.*

*Ichneumon placidus*, Smith, Trans. Ent. Soc., 1876, p. 476.

New Zealand (*Wakefield*).—B. M.

51. *Ichneumon conspiratus.*

*Ichneumon conspiratus*, Smith, Trans. Ent. Soc., 1876, p. 475.

New Zealand (*Wakefield*).—B. M.

52. *Ichneumon huttonii*, n. s.

Exp. al. 8 l.; long. corp. 5½ l.

♀. Dark chesnut, darkest on the head and mesothorax, where it shades into deep mahogany. The following markings are pale yellow:—A stripe within each eye; a large oval spot on the lower part of the cheeks; a spot below each antenna; a stripe on each side the collar; a large spot in the middle of the mesothorax; the scutellum and post-scutellum; three large spots on the pleura; and one on the upper side of the hind coxæ. Antennæ black, from the extremity of the basal joint. Wings yellowish hyaline, with piceous nervures; stigma yellow. The male has the large yellow spot on the back of the thorax replaced by two long spots; the whole face, the cheeks, the basal joint of the antennæ, the four front coxæ and trochanters, and a spot on each side of the pectus between them, a spot on each side of the neck, and an additional spot below the front wings, are all yellow; the rest as in the female, except that the wings are clearer hyaline.

Dunedin (*Hutton*).—B. M.

53. *Ichneumon invectus.*

*Ichneumon invectus*, Smith, Trans. Ent. Soc., 1876, p. 475.

New Zealand (*Wakefield*).—B. M.

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54. *Ichneumon perfidiosus.*

*Ichneumon perfidiosus*, Smith, Trans. Ent. Soc., 1876, p. 475, pl. iv., fig. 5.

New Zealand (*Wakefield*).—B. M.

CRYPTIDES.

55. *Cryptus penetrator.*

*Cryptus penetrator*, Smith, Trans. Ent. Soc., 1878, p. 2.

Otago (*Hutton*).—B. M.

56. *Mesostenus albopictus.*

*Mesostenus albopictus*, Smith, Trans. Ent. Soc., 1876, p. 477, pl. iv., fig. 1.

North Island (*Enys*).—B. M.

OPHIONIDES.

[57. ? *Ophion luteus.*

*Ichneumon luteus*, Linn., Syst. Nat., i., p. 566, n. 51 (1758); Fabr., Syst. Ent., p. 341, n. 75 (1775).

"New Zealand" (*Fabricius*).*]

58. *Ophion inutilis.*

*Ophion inutilis*, Smith, Trans. Ent. Soc., 1876, p. 478, *l. c.* 1878, p. 2.

New Zealand (*Wakefield*; *Hutton*).—B. M.

59. *Ophion ferrugineus.*

*Ophion ferrugineus*, Smith, Trans. Ent. Soc., 1878, p. 2.

Otago (*Hutton*).—B. M.

60. *Ophion peregrinus.*

*Ophion peregrinus*, Smith, Trans. Ent. Soc., 1876, p. 478.

New Zealand (*Wakefield*).—B. M.

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* Fabricius mentions New Zealand among the localities for this common European species, but he probably mistook one of the indigenous New Zealand species for it.

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61. *Ophion skeltonii*, n. s.

Exp. al. 10 l.; long. corp. 7½ l.

Shining castaneous; face, clypeus, and vertex as far as a narrow line behind the eyes yellow; eyes, ocelli, extreme points of the mandibles, and claws black; antennæ wholly castaneous, and a castaneous dot on each side at the base of the clypeus; the lower parts of the face and the extreme back of the head are also of the same colour. Wings iridescent, with piceous nervures, and finely speckled with brown; stigma large, yellowish; below it is a round darker yellow spot in the upper part of the interno-cubital cell, where it begins to narrow; and halfway between this and the extremity of the cell is a curved yellowish line.

Blenheim (*Skelton*).—B. M.

62. *Ophion insularis*, n. s.

Exp. al. 13 l.; long. corp. 8 l.

Closely allied to *O. skeltonii*, but less shining; the head and ocelli are concolorous, except the eyes, which are liver-coloured, and narrowly edged within and behind with dull yellow. Wings nearly as in *skeltonii*, but the spot below the stigma is larger, more yellow, and followed by a small darker spot close to the upper part of the curved line, which is piceous, like the other nervures.

New Zealand (*Sinclair*).—B. M.

These two curious species are more nearly related to an unnamed *Ophion* from Natal than to any other in the British Museum collection.

63. *Paniscus ephippiatus*.

*Paniscus ephippiatus*, Smith, Trans. Ent. Soc., 1876, p. 478, *l. c.* 1878, p. 3.

New Zealand (*Wakefield*; *Hutton*).—B. M.

64. *Scolobates intrudens*.

*Scolobates intrudens*, Smith, Trans. Ent. Soc., 1878, p. 3.

Otago (*Hutton*).—B. M.

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65. *Scolobates varipes.*

*Scolobates varipes*, Smith, Trans. Ent. Soc., 1878, p. 3.
Otago (*Hutton*).—B. M.

TRYPHONIDES.

66. *Mesoleptus mülleri.*

*Mesoleptus mülleri*, Butler, Voy. Erebus & Terror, Ins., pp. 27, 46, woodcut (1874).
New Zealand (*Wakefield*).—B. M.

67. *Tryphon obstructor.*

*Tryphon obstructor*, Smith, Trans. Ent. Soc., 1878, p. 4.
Otago (*Hutton*).—B. M.

PIMPLIDES.

68. *Rhyssa fractinervis.*

*Rhyssa fractinervis*, Vollenhoven, Tijdschr. Ent. (2), viii., p. 67, pl. iv., fig. 1, 1*a* (1872).
*Rhyssa antipodum*, Smith, Trans. Ent. Soc., 1876, p. 479, pl. iv., fig. 4.
New Zealand (*Wakefield*).—B. M.

69. *Lissonota flavopicta.*

*Lissonota flavopicta*, Smith, Trans. Ent. Soc., 1878, p. 4.
Otago (*Hutton*).—B. M.

70. *Lissonota albopicta.*

*Lissonota albopicta*, Smith, Trans. Ent. Soc., 1878, p. 4.
Otago (*Hutton*).—B. M.

BRACONIDÆ.

71. *Rhogas penetrator.*

*Rhogas penetrator*, Smith, Trans. Ent. Soc., 1878, p. 5.
Otago (*Hutton*).—B. M.

EVANIIDÆ.

72. *Fœnus crassipes.*

*Fœnus crassipes*, Smith, Trans. Ent. Soc., 1876, p. 479.
New Zealand (*Wakefield*).—B. M.

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73. *Fœnus unguicularis.*

*Fœnus unguicularis*, Smith, Trans. Ent. Soc., 1876, p. 480, pl. iv., fig. 8.

New Zealand (*Wakefield*).—B. M.

## CHALCIDIDÆ.

### EUPELMIDÆ.

74. *Eupelmus messene.*

*Eupelmus messene*, Walk., Mon. Chalc., ii., p. 95 (1839).

♀. "Apterus, ferrugineus, sublinearis, fere planus, nitens, scite punctatus, parce pubescens; thorax longi-ovatus; petiolus vix ullus; abdomen sublineare, piceum, læve, thorace paullo angustius non longius; pedes graciles, ferruginei; oviductus exertus; vaginæ abdomine breviores. (Corp. long. lin. 1¼)."

New Zealand (*Darwin*).*

### PTEROMALIDÆ.

75. *Pteromalus lelex.*

*Pteromalus lelex*, Walk., Mon. Chalc., ii., p. 95 (1839).

"Viridis; oculi et ocelli rufi; antennæ nigræ; articuli 1us et 2us virides; abdomen cupreo-varium; pedes lutei; coxæ virides; femora viridia, apice et basi lutea; tarsi apice fusci; meso- et meta-tibiæ fulvo-cinctæ; alæ limpidæ; squamulæ piceæ; nervi proalis fusci, metalis fulvi. (Corp. long. lin. ⅓; alas. lin. 1½).

♀. Corpus convexum, obscurum, scitissime squameum, parce hirtum; caput transversum, breve, thorace paullo latius; antennæ subclavatæ, corporis dimidio non longiores; thorax ovatus; prothorax brevissimus; mesothoracis scutum longitudine multo latius; parapsidum suturæ conspicuæ; scutellum subrotundatum; metathorax transversus, declivis; petiolus brevissimus; abdomen ovatum, nitens, læve, supra planum, subtus carinatum, apice attenuatum et acuminatum, thorace paullo longius vix latius; pedes simplices, subæquales; alæ mediocres."

New Zealand (*Darwin*).—B. M.

* I am not sure if the type exists in the British Museum. I have not been able to find it, and it is not mentioned in Walker's List of *Chalcididæ* in B. M.

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76. *Pteromalus iambe.*

*Pteromalus iambe*, Walk., Mon. Chalc., ii., p. 95 (1839).

"♀. Æneus, subtus æneo-viridis; oculi et ocelli rufi; antennæ nigræ; articuli 1us et 2us virides; abdomen cupreo-varium; pedes fulvi; coxæ virides; femora viridia, apice et basi fulva; tarsi apice fusci; meso- et metatibiæ fuscæ; alæ limpidæ; squamulæ piceæ; nervi proalis fusci, metalis fulvi. (Corp. long. lin. 1; alar. lin. $1\frac{2}{3}$)."

New Zealand (*Darwin*).—B. M.

## OXYURA.

### PROCTOTRUPIDÆ.

77. *Proctotrupes intrudens.*

*Proctotrupes intrudens*, Smith, Trans. Ent. Soc., 1878, p. 5.

Otago (*Hutton*); Canterbury (*Wakefield*).—B. M.

### DIAPRIIDÆ.

78. *Spilomicrus quadriceps.*

*Spilomicrus quadriceps*, Smith, Trans. Ent. Soc., 1878, p. 6.

Otago (*Hutton*).—B. M.

79. *Diapria coccophaga.*

*Diapria coccophaga*, Maskell, Trans. N. Z. Inst., xi., p. 230, pl. ix., figs. 2—5 (1880).

New Zealand (*Maskell*).

Parasitic on *Coccidæ*.

## TEREBRANTIA.

### SIRICIDÆ.

#### XIPHYDRIINÆ.

80. *Brachixiphus deceptus.*

*Derecyrta deceptus*, Smith, Trans. Ent. Soc., 1876, p. 474, pl. iv., fig. 6.

♂. *Xiphydria flavopicta*, Smith, *l.c.*, 1878, p. 1.

Otago (*Hutton*); Canterbury (*Wakefield*).—B. M.

The two radial cells separate this species from *Derecyrta*, and the shorter ovipositor removes it from



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*Xiphydria*. I therefore place it provisionally in *Brachixiphus*, the type of which is *B. grandis*, Phil., from Chili. *B. flavipes*, Phil., a second Chilian species, is, however, a true *Derecyrta*. I may add that *D. bicolor*, Westw., is certainly the male of *B. grandis*.

## TENTHREDINIDÆ.

### SELANDRIINÆ.

81. *Monostegia antipoda*, n. s.

Exp. al. 5 l.; long. corp. 3 l.

Deep black, legs more or less testaceous; wings hyaline, with piceous nervures; an oblique shade below the stigma, most distinct towards the inner margin.

New Zealand (*Wakefield*).—B. M.

Described from two female examples. There is very little character about this species, the only true sawfly which has yet been met with in New Zealand; but I hope to figure it shortly. Mr. Smith mistook this for the European *T. adumbrata*, Klug; but the latter is a true *Eriocampa* according to the neuration. The neuration of *M. antipoda* is as follows:—Fore wings with two radial and four submarginal cells, the two recurrent nervures received by the second and third respectively; the first enters the second cell about the middle, and the second enters the third cell a little before the middle; the dividing nervule of the radial cells enters the third submarginal cell before the dividing nervule between the third and fourth; lanceolate cell with oblique cross-nervule; hind wings with one inner cell.

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## IV. *Descriptions of New Species of* Galerucidæ. By Joseph S. Baly, F.L.S.

[Read February 2nd, 1881.]

List of Species.

| | |
|---|---|
| *Oides costata* . . . . . | Lake Nyassa. |
| ,, *antennalis* . . . . | Queensland. |
| *Blepharida guttulata* . . | Angola. |
| ,, *ornata* . . . | Transvaal. |
| ,, *xanthospilota* . | China. |
| ,, *nigripennis* . . | Malacca. |
| *Eutheca malayana* . . . | Macassar. |
| *Notozona Clarkii* . . . . | Bahia. |
| *Asphæra oblecta* . . . . | Amazons. |
| ,, *inclusa* . . . . | Venezuela. |
| *Podagrica madagassa* . . | Madagascar. |
| *Crepidodera madagassa* . . | ,, |

### *Oides costata.*

Anguste ovata, postice vix ampliata, convexa, pallide rufo-picea, subopaca, antennis basi piceis exceptis, nigris; subtus nitida, mesosterno, abdomine, apice excepto, pedibusque nigris; thorace tenuiter punctato, lateribus late reflexis; elytris crebre rugoso-punctatis, leviter elevato-costatis. Long. 7 lin.

*Hab.* Lake Nyassa.

Head shining, nearly impunctate; vertex impressed in the middle with a large but shallow fovea; labrum and palpi nigro-piceous; antennæ robust, more than half the length of the body, black, the three lower joints piceous, stained with black. Thorax twice as broad as long; the sides broadly reflexed, obtusely rounded, converging and sinuate just behind the apex, the anterior angles slightly produced, subacute, the hinder ones obsolete; surface finely punctured, broadly but slightly excavated on either side behind the middle, just within the lateral margin, impressed on the hinder disk with a wedge-shaped fovea. Scutellum trigonate, shining, impunctate. Elytra rather broader than the thorax at the

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base, gradually dilated to the middle, thence converging and obliquely rounded to the apex; each elytron just before the latter distinctly sinuate, the apical angle being acute and slightly excavated; above convex, closely rugose-punctate; each elytron with a number of distinctly raised but ill-defined longitudinal costæ, those on the outer side less distinct.

*Oides antennalis.*

Ovata, convexa, flava, nitida, oculis nigris, tarsis infuscatis; antennis filiformibus, ad corpus fere æquilongis, articulis 2do ad 7um apice, externis quatuor totis nigris; thorace tranverso, distincte, minus crebre punctato, lateribus late reflexis; elytris crebre punctatis, limbo laterali reflexo. Long. 3½ lin.

*Hab.* Australia, Queensland.

Body regularly ovate; head granulose, vertex impressed with a small fovea; face between the eyes transversely excavated; eyes and jaws black; antennæ nearly equal to the body in length, filiform, the extreme apex of the basal joint piceous, the apices of the second, third and fourth, the upper halves of the fifth and sixth, the upper two-thirds of the seventh and eighth, black; the rest of the outer joints to the apex entirely so. Thorax three times as broad as long; sides broadly reflexed, obliquely rounded and converging from base to apex, broadly rounded at the base, the hinder angles obsolete; disk distinctly punctured, granulose, faintly excavated on the hinder disk, and again transversely just behind the apex. Elytra closely punctured, ovate, the outer limb broadly dilated, reflexed.

*Blepharida guttulata.*

Anguste oblongo-ovata, convexa, pallide castanea, nitida; antennis flavo-fulvis, thorace fulvo maculato; elytris nigro-piceis, limbo externo castaneo; fortiter punctato-striatis, interspatiis fulvo maculatis. Long. 4 lin.

*Hab.* Angola.

Vertex finely rugose-punctate on either side, middle of front shining, impunctate. Thorax nearly twice as broad as long; sides straight and parallel from the base to beyond the middle, thence converging to the apex, the

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anterior angles thickened, slightly excurved; disk remotely punctured in the middle, more closely and strongly punctured on the sides; surface impressed on either side at the base by a deep fovea, and at the apex on each side, by a strongly punctured perpendicular groove, which extends backwards for about one-fourth the length of the disk; from its apex a similar groove extends directly outwards to the outer margin, whilst a second curves obliquely inwards, and terminates a short distance in front of the basal margin; entire limb of thorax distinctly margined. Elytra oblong, convex, strongly and regularly punctate-striate, the outer interspaces moderately convex; nigro-piceous, the outer limb narrowly edged with castaneous; each interspace with a number of fulvous spots, placed at irregular distances on its surface.

*Blepharida ornata.*

Anguste oblongo-ovata, convexa, pallide fulvo-picea, nitida, antennis extrorsum oculisque nigris; thorace transverso, lateribus rotundatis, disco minute punctato, antice utrinque linea perpendiculari e punctis majoribus formata instructo; elytris sat fortiter punctato-striatis, interspatiis planis, ad marginem convexiusculis; castaneis, extus et ad basin nigro-piceo tinctis; flavo maculatis, vitta suturali alteraque discoidali (hac basi et apice excepta) immaculatis. ♂. Abdominis apice concavo-emarginato. ♀. Abdominis apice integro. Long. $2\frac{2}{3}$—$3\frac{1}{2}$ lin.

*Hab.* Transvaal.

Head sparingly and minutely punctured; interocular spaces bounded within by a deep sinuate groove; eyes narrow, elongate; antennæ half the length of the body, six or seven outer joints black. Thorax three times as broad as long; sides broadly rounded, converging in front, the anterior angles thickened; disk minutely punctured, faintly excavated on either side near the outer margin; anterior disk impressed on either side with four or five distinct punctures which form a perpendicular row extending from the apical margin to the middle of the thorax. Scutellum trigonate. Elytra broader than the thorax, oblong-ovate, slightly attenuated towards the apex in the male, convex, not depressed below the basilar space, strongly punctate-striate, the striæ near the outer margin sulcate; interspaces obsoletely granulose, plane

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on the inner disk, convex on the outer border and at the apex.

*Blepharida xanthospilota.*

Ovata, convexa, pallide picea, nitida, femoribus posticis apice nigro-piceis; thorace flavo, piceo-tincto, lateribus rotundatis, disco antico utrinque longitudinaliter sulcato, sulcis postice ad apicem ramulos duos emittentibus (ramulum unum extrorsum productum transversum longe intra marginem abbreviatum, secundum curvatum, introrsum ductum), basi utrinque breviter sulcato, et inter sulcos transversim impresso; elytris fortiter punctato-striatis, striis sulcatis, interspatiis leviter convexiusculis, leviter transversim strigosis, albido-flavo maculatis. Long. 3 lin.

*Hab.* China, collected by Mr. G. Lewis.

Vertex minutely punctured; interocular spaces bounded within by a deep sinuate groove. Thorax nearly three times as broad as long; sides rounded, converging in front, the anterior angles thickened, excurved; disk minutely and very closely punctured, sometimes obsoletely rugulose; basal margin impressed on either side with a short perpendicular sulcus, between which is a curved transverse groove; anterior disk impressed on either side by a deep longitudinal sulcation which extends backwards from the apical margin nearly to the middle of the thorax; from its hinder apex a slightly curved groove runs obliquely downwards and inwards on the middle disk, a second much deeper and more coarsely punctured, runs directly outwards towards the lateral margin, but terminates some distance before reaching the latter. Scutellum trigonate, its apex obtuse. Elytra oblong, convex, not depressed below the basilar space, strongly punctate-striate, the striæ sulcate; interspaces slightly convex, irregularly transversely strigose, each with a number of small pale yellow spots, placed at irregular intervals on its surface.

*Blepharida nigripennis.*

Elongato-ovata, convexa, pallide rufo-picea, nitida, antennis fulvis, oculis, genubus posticis elytrisque nigris; thorace lateribus ante medium obtuse angulatis, disco minute punctato, utrinque ante medium profunde longitudinaliter sulcato, ante basin leviter arcuatim depresso;

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medio nigro-binotato, elytris infra basin transversim excavatis, fortiter punctato-striatis. Long. 4½ lin.

*Hab.* Malacca. A single specimen collected by Mr. Wallace.

Vertex smooth, impunctate; interocular spaces bounded within by a deep groove; antennæ (the basal joint excepted) pale fulvous; apices of jaws and eyes black. Thorax twice as broad as long; sides narrowly edged with black, straight and nearly parallel from the base to the middle, dilated and obtusely angulate just before the latter, thence obliquely converging to the apex, the anterior angles excurved; disk minutely punctured, its anterior portion impressed on either side with a deep longitudinal sulcation, which is dilated at base and apex, and extends from the anterior margin nearly to the middle of the thorax. Scutellum obtusely truncate. Elytra rather broader than the thorax, narrowly oblong-ovate; convex, the basilar space bounded without and beneath by a distinct depression; strongly punctate-striate, the interspaces sparingly impressed with minute punctures.

*Eutheca malayana.*

Anguste ovata, convexa, pallide piceo-fulva, nitida, antennis extrorsum oculisque nigris, thorace flavo, lateribus ante medium obtuse angulatis; elytris sat fortiter punctato-striatis, interspatiis planis, iis ad marginem obsolete convexis. Long. 4 lin.

*Hab.* Macassar.

Vertex smooth, impunctate; interocular spaces bounded within by a deep sinuate groove; antennæ more than half the length of the body, the five outer joints, together with the apex of the sixth, black. Thorax more than twice as broad as long; sides straight and nearly parallel from the base to the middle, slightly produced and obtusely angulate just beyond the latter, thence obliquely converging to the apex; disk smooth, very minutely and somewhat sparingly punctured; on either side in front is a fine distinctly punctured perpendicular groove, which extends downwards from the anterior margin for nearly half the length of the thorax, and then curves abruptly outwards to the lateral margin; at the base, placed immediately below the perpendicular grooves are two small foveæ. Elytra oblong, convex, very faintly

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depressed below the basilar space, finely and regularly punctate-striate, two or three outer striæ more strongly punctured, their interspaces moderately convex, the rest of the interspaces plane.

*Notozona Clarkii.*

Anguste ovata, convexa, flava, nitida, femoribus apice, tibiis, tarsis, scutello antennisque nigris, vertice piceo; thorace lævi; elytris oblongo-ovatis, regulariter punctato-striatis, sanguineis, sutura, basi, limbo basali, nec non limbo externo nigris. Long. 3 lin.

*Hab.* Bahia.

Vertex smooth, impunctate, front impressed on either side just above the encarpæ with a transversely oblong fovea; encarpæ contiguous; carina short, its apex wedge-shaped; six lower joints of antennæ black (*the rest broken off*). Thorax twice as broad as long; sides straight and parallel from the base to beyond the middle, thence obliquely converging towards the apex, anterior angles armed with an excurved acute tooth; disk nitidous, transversely convex, faintly excavated at the base. Elytra broader than the thorax, slightly attenuated at the apex, convex, distinctly punctate-striate, the interspaces finely punctured.

*Asphæra oblecta.*

Anguste ovata, convexa, obscure fulva, piceo tincta, capite fulvo-piceo, nitida, femoribus apice, tibiis tarsisque anticis quatuor, scutello, ore antennisque piceis; thorace lævi, lacteo, lateribus rotundatis, a basi ad apicem convergentibus, angulis anticis incrassatis, antrorsum productis; elytris oblongis, lacteis, tenuissime piceo punctatis; utrisque plaga subquadrata vix infra basin, nec marginem nec suturam attingente, fasciaque irregulari inter medium et apicem, extrorsum abbreviata, positis, piceis, metallico tinctis. Long. 3½ lin.

*Hab.* Amazons.

Head subrotundate; vertex nitidous, impressed with a few round punctures, from each of which springs a single erect piceous hair; encarpæ separated from the front by a transverse grooved line; eyes distinctly sinuate, subreniform; lower portion of clypeus with a strongly raised transverse ridge, the anterior surface of which is oblique; carina strongly raised, its lower end extending

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downwards to the transverse ridge; antennæ filiform, the fourth joint slightly longer than either the third or fifth. Thorax more than twice as broad as long; sides rounded, converging from the base towards the apex, the anterior angle produced, thickened, its apex obtuse, the hinder angle mucronate; disk nitidous, impunctate, the lateral margin narrowly incrassate; at some little distance within the latter is a fine faint longitudinal excavation. Scutellum piceo-violaceous. Elytra oblong, broader than the thorax, not dilated posteriorly, outer limb moderately dilated, reflexed, fringed behind the middle with a single row of long hairs. Hinder tibia armed before its apex with a distinct tooth, claw only slightly thickened.

*Asphæra inclusa.*

Elongato-ovata, convexa, nigra, nitida, capite thoraceque albidis, encarpis, ore antennisque nigris; hoc lævi, lateribus rectis, a basi apicem versus convergentibus, angulis anticis valde antrorsum productis, subacutis; elytris tenuiter punctatis, albido-fulvis, nitidissimis, utrisque plaga subquadrata baseos maculam subrotundatam includente, altera vix pone medium transverso-quadrata, postice leviter concava, tertiaque subapicali, trigonata, nigro-violaceis. Long. 3⅔ lin.

*Hab.* Venezuela.

Head trigonate; vertex smooth, impunctate, front punctured on either side near the eye; encarpæ nigro-piceous, subquadrate, contiguous; clypeus with a transverse, obsoletely-angled ridge, from the middle of which the ill-defined carina runs upwards to the encarpæ; lower edge of the clypeus, together with the mouth black; antennæ filiform, the third, fourth, and fifth joints equal in length, each about twice the length of the second; eyes distinctly sinuate within. Thorax nearly twice as broad as long at the base; sides straight, obliquely converging from the base towards the apex; anterior angles strongly produced anteriorly, thickened, subacute; disk shining, impunctate; sides narrowly margined. Scutellum trigonate. Elytra rather broader than the thorax, oblong-ovate, not dilated posteriorly, very finely punctured, yellowish white, with a very faint pinkish tinge: each elytron with three large nigro-violaceous patches; the first, placed rather nearer the



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outer margin than the suture, subquadrate, extends from the base one-third down the elytron; the second just below the middle, forms a broad fascia, abbreviated at either end; whilst the third, trigonate, is placed close to the apex; in the centre of the basal patch is a large subovate pale yellow spot. Hinder tibiæ not emarginate; hinder metatarsus equal in length to the following two joints united; hinder claw strongly swollen.

*Podagrica madagassa.*

Rotundato-ovata, convexa, sordide fulva, nitida, tarsis antennisque (his basi exceptis) nigris; thorace subcrebre distincte punctato, utrinque basi, sulco brevi longitudinali impresso; elytris subcrebre punctatis. Long. $2\frac{1}{3}$ lin.

*Hab.* Madagascar.

Vertex convex, impunctate; encarpæ narrowly wedge-shaped, contiguous at their extreme apices; carina obsolete; antennæ much less than half the length of the body, the second and following joints nearly equal in length; five lower joints fulvous, the apex of the fifth, together with the whole of the six upper ones, black. Thorax twice as broad at the base as long; sides rounded and converging from the base towards the apex, the anterior angles armed with a short excurved tooth; basal margin on either side oblique, bisinuate; disk distinctly but not very closely punctured, impressed on either side at the base with a short longitudinal groove; at the apex on each side, exactly opposite the basal groove, is a single row of punctures, much larger and more deeply impressed than those covering the general surface. Elytra subquadrate-ovate, convex, more strongly and more closely punctured than the thorax.

*Crepidodera madagassa.*

Anguste ovata, convexa, nitida, subtus nigra, supra metallico-viridis, antennis pedibusque flavis; thorace remote punctato; sulco basali leviter impresso; elytris sat fortiter punctato-striatis, interspatiis convexiusculis. —Long. $1\frac{1}{6}$ lin.

*Hab.* Madagascar.

Vertex shining, impunctate; encarpæ subovate, contiguous, well-defined; carina linear; eyes large, prominent; antennæ shorter than the body, filiform, the

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second joint oval, incrassate, being about half the length of, and of the same thickness as, the basal one; the third and following ones to the tenth nearly equal in length, each about half as long again as the second, the eleventh rather longer, its apex acute. Thorax about half as broad again as long; sides rounded, nearly straight, but diverging from the base to the middle, anterior angle thickened, very obliquely truncate, the hinder one acute; disk convex, sparingly punctured; basal sulcation rather shallow, slightly sinuate in the middle, impressed with a single row of strong punctures, rather coarser than those on the disk. Elytra much broader than the thorax, oblong, not depressed below the basilar space, the latter on each elytron slightly thickened, the humeral callus prominent; surface rather strongly punctate-striate, interspaces nitidous, slightly but distinctly convex, more strongly thickened near the lateral margin, the two outer interspaces distinctly costate; towards the apex of the elytron the interspaces are much flattened, nearly plane, the striæ themselves being more finely punctured.

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## V. *On the Genus* Hilipus, *and its Neo-Tropical Allies.*

By Francis P. Pascoe, F.L.S., &c.

[Read March 2nd, 1881.]

*Hilipus* is a genus of *Curculionidæ* closely allied to *Pissodes* and *Hylobius*; Germar mostly referred the species he described to the former. The Munich catalogue enumerates no less than 220 species, and a few more have since been described by Dr. Kirsch. The collection of the British Museum and a large number of named specimens in my own, as well as a cursory examination of the fine collections of M. Chevrolat, and of Mr. Fry, and an attentive examination of the descriptions of the missing species in Schönherr's great work, have enabled me, I hope, to avoid redescribing any of the old species. I have, however, often found it very difficult to make quite sure. The descriptions, although very full, are rather the descriptions of individuals than of species; especially has no allowance been made for size, proportion, or variation of colour; all are described with a minuteness which, when there is a discrepancy in any character, throws a doubt, however slight, on the identification.*

For Lacordaire *Hilipus* is a "group of genera," as, notwithstanding the large number of species, it is not often that we can bring more than three or four together in unmistakable affinity. The majority are isolated, or are only connected by a character that has nothing correlative.

Nevertheless, if we are to have any definition of *Hilipus*, it is necessary to adopt characters to a certain extent arbitrary; and thereby to exclude such species as

* With regard to size, it is often simply confusing. For instance, here is one taken at random: *Hilipus Okeni*, we are told, is half the size of *H. trachypterus*, *H. tuberculatus* is scarcely larger than *H. Okeni*, *H. echinatus* is half the size of *H. tuberculatus*. Referring to *H. trachypterus* as the standard, so to say, we learn that it is twice the size of *H. onychinus*, and for this we must go to Germar's 'Insectorum Species.'



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do not come within the prescribed conditions. In addition to the ordinary characters of its subfamily (*Hylobiinæ*), *i. e.*, the rectilinear and oblique scrobes terminating beneath the rostrum, the transverse eyes, and the metasternum more or less elongate, I would exclude from the genus *Hilipus* forms which have not all the femora clavate and armed with well-marked teeth beneath, tibiæ terminating in a free curved mucro, and two unconnected claws. Generally also there are ocular lobes, but this character, and indeed all others, must be taken with some reserve. There is a gradation in all of them in many species that defies limitation. And, if the group is ever monographed, it will have to be broken up into a number of genera, or so-called genera, most of which will probably contain only a single species.

The absence of one or more of the characters mentioned above has, however, obliged me to propose eight or nine genera for certain species that have either been described, or are found in our cabinets under catalogue-names, or that most probably would be referred to *Hilipus* by anyone inclined to let it remain within its old lines. Beyond these I have not found any character that can be relied on as being anything more than of specific value. To say what separates *Hilipus* from *Hylobius* would be difficult; the difference between the club of the antennæ, distinctly marked off from the funicle in the former and its close connection in the latter genus, is a character that would be far from satisfactory in many instances. *Pissodes* is separated from both by the non-contiguity of its anterior coxæ.

It is difficult to believe that all the minute yet definite variations that go to differentiate a species from its congeners can be of any special benefit in the struggle for life, or that the possession of any one character—such, for instance, as the comparative length of an antenna-joint—can be an advantage or a disadvantage. The conditions under which the *Hilipoda* exist cannot vary to any great extent; with the exception of four or five mostly Chilian species,* they are all tropical, and in the larval state probably lignivorous. It requires a

* Mannerheim gives one species from California (*H. scrobiculatus*), but this is the female of *Plinthus carinatus*, Boh., according to Leconte. *H. squamosus*, Boh. (*Pissodes*, Lec. *olim*), is a rare species of Georgia and Florida.

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robust faith to believe that "the action of external causes is alone able to bring about these variations" generally so very decided as regards species, but so extremely graduated when examined singly.*

In the arrangement of the species described below I have followed Schönherr.† It is a purely artificial arrangement, tending, as Lacordaire observes, to separate nearly allied species; still it is more convenient to follow in a detached article like the present; indeed no other would be possible without an examination of all the species.

## Hilipus.

The two basal joints of the funicle equal or nearly equal in length.

Apex of the elytra rounded, or, each elytron slightly acuminate.

Elytra without tubercles or granules.

| | | | |
|---|---|---|---|
| *Hilipus* | *medullosus.* | *Hilipus* | *respiciens.* |
| ,, | *mirus.* | ,, | *vestitus.* |
| ,, | *commodus.* | ,, | *empiricus.* |
| ,, | *aulicus.* | ,, | *insidiosus.* |
| ,, | *mysticus.* | ,, | *decorus.* |
| ,, | *collectus.* | ,, | *spectator.* |
| ,, | *pœcilus.* | ,, | *suspensus.* |
| ,, | *nudipennis.* | ,, | *tetanicus.* |
| ,, | *posticus.* | ,, | *circulatus.* |

Elytra with the alternate interstices raised.

*Hilipus hipporhinoides.*

Elytra with tubercles or granules.

| | | | |
|---|---|---|---|
| *Hilipus* | *contumax.* | *Hilipus* | *grammicus.* |
| ,, | *cratosomoides.* | ,, | *obesulus.* |
| ,, | *severus.* | ,, | *caliginosus.* |
| ,, | *diversus.* | ,, | *vappa.* |
| ,, | *austerus.* | ,, | *scabrosus.* |
| ,, | *aspredo.* | ,, | *indutus.* |
| ,, | *intensus.* | ,, | *depictus.* |

* "There is a tendency to vary, due to causes of which we are quite ignorant."—Darwin, 'Origin of Species,' 6th ed., p. 107.

† Gen. et Sp. Curcul., tom. vii., pars ii., p. 27 *et seq.*

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Second joint of the funicle twice as long, or, at least, half as long again as the first.

Apex of the elytra rounded.

Elytra without tubercles or granules.

*Hilipus catenatus.*

Elytra with tubercles or granules.

*Hilipus galeotes.*
,, *monitor.*
,, *stellio.*
,, *exustus.*
*Hilipus expletus.*
,, *molestus.*
,, *cynicus.*
,, *occultus.*

Apex of the elytra acuminate.

*Hilipus prionurus.*
*Hilipus miliaris.*

First joint of the funicle half as long again as the second.

*Hilipus paradoxus.*

The following are new genera and species:—

*Syphorbus turgidus.*
*Byzes sciureus.*
*Arniticus gladiator.*
,, *gibbosus.*
,, *brevicollis.*
*Chœrius squalidus.*
*Plethes albolineatus.*
,, *verrucosus.*
*Bactrius lophotoides.*
*Acallestes talpa.*

The two following described species are referred to new genera:—

*Irenarchus fossilis.* (Thoms.)
*Tartarisus signatipennis.* (Blanch.)

*Hilipus medullosus.* (Pl. I., fig. 6).

H. oblongus, fuscus, subopacus, femoribus basi, tibiis tarsisque rufo-ferrugineis; prothorace modice ampliato, fere impunctato, vitta utrinque albo-squamosa; elytris subtiliter punctatis, interstitiis lævibus, singulatim vitta lata inæqualiter dentata, ad apicem extensa, albo-squamosa. Long. 8 lin.

*Hab.* Parana.

Oblong, brown, subopaque; prothorax and elytra with a stripe on each side of closely-set white scales, very irregularly indented on the latter; rostrum slightly curved, much longer than the prothorax; antennæ reddish ferruginous, the club black, funicle elongate; prothorax rather longer than broad, bisinuate at the

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base, slightly expanded and rounded at the sides, punctures almost obsolete; scutellum subtriangular; elytra three and a quarter times the length of the prothorax, moderately convex, the apex rounded, preapical callus slight, punctures in lines, the intervals smooth; body beneath and distal half of the femora chocolate-brown, rest of the legs reddish ferruginous; claw-joint nearly as long as the rest of the tarsus.

Allied to *H. catagraphus*, Germ., but, *inter alia*, less convex, elytra more delicately punctured, and the stripe on each side more indented.

*Hilipus mirus.*

H. oblongo-ovatus, fulvo-ferrugineus, supra granulis concoloribus instructus, prothorace vitta utrinque, elytrisque basi plaga laterali, una antemediana, duabus alteris postice—ad suturam approximatis—niveo-squamosis. Long. 7 lin.

*Hab.* Colombia.

Oblong-ovate, yellowish ferruginous, above with granules of the same colour, a stripe on each side of the prothorax, and irregular patches on the elytra composed of pure white scales; head with a deep fovea between the eyes, these approximate; rostrum piceous, as long as the prothorax, slightly curved, closely punctured at the base, the scrobe commencing at the distal third; antennæ piceous; scape elongate; funicle with the first two joints much longer than the remainder, the last four turbinate, club not longer than the last five joints together; prothorax rather narrow, longer than broad, rounded anteriorly at the sides, the posterior half nearly parallel, granules crowded; scutellum elongate-scutiform; elytra convex, subelongate, the sides nearly parallel, much broader than the prothorax at the base, preapical callus not prominent, the apex rounded, subseriate-granulate, the granules more or less masking the punctures; body beneath and legs ferruginous, with scattered greyish setulose scales; claw-joint nearly as long as the remainder of the tarsus.

I have adopted M. Chevrolat's MS. name for this handsome species; in coloration it is not unlike *H. draco*, Fab., but is much larger, and considerably narrower in proportion, and it has not the slender rostrum of that species.



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*Hilipus commodus.*

H. oblongo-ovatus, niger nitidus, prothorace utrinque vitta lata, elytrisque singulatim plagis duabus irregularibus, una apicali ad suturam approximante, altera recurva basali silaceo-squamosis, ornatis; rostro apice vix dilatato. Long. 7 lin.

*Hab.* Macas.

Oblong-ovate, glossy black, a stripe—gradually broader behind—on each side of the prothorax, and two irregular patches on each elytron,—the anterior recurved, extending from the base to the middle,—the other apical and rounded, nearly meeting at the suture, closely covered with silaceous scales, but all the patches surrounded with a paler or whitish margin; rostrum about as long as the prothorax, curved, scarcely dilated at the tip; antennæ ferruginous; two basal joints of the funicle moderately elongate, the last subtransverse; apex approximate; prothorax about as long as broad, parallel at the sides from the middle, posterior half of the disk depressed, coarsely and rather closely punctured; scutellum obovate; elytra convex, very slightly rounded at the sides, preapical callus nearly obsolete, finely seriate-punctate; body beneath and legs pitchy black, with few scales; claw-joint long.

This handsome species is allied to *H. leopardus*, Boh., but is rather differently coloured, the prothorax not contracted at the base, depressed posteriorly, and more coarsely punctured.

*Hilipus aulicus.*

H. oblongo-ovatus, niger nitidus, prothorace elytrisque vittis flexuosis et ocellis silaceo-squamosis ornatis; rostro piceo, longiusculo, punctato, apice vix dilatato. Long. 6½ lin.

*Hab.* Brazil.

Oblong-ovate, glossy black, prothorax and elytra with irregular stripes, and ocellated spots—on the latter—of silaceous scales; rostrum pitchy, much longer than the prothorax, moderately curved, punctured throughout; antennæ pitchy, two basal joints of the funicle rather long, the last joint transverse, club nearly as long as the last six; eyes lateral, narrowed beneath, and

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approximate; prothorax rather longer than broad, rounded at the sides, sparingly punctured, two stripes at the side, the lower curved; scutellum ovate; elytra much broader than the prothorax and three times the length, convex, the lateral stripe forming at the middle an irregular ocellus, a large round ocellus nearly meeting its fellow at the suture posteriorly, the nearly obsolete preapical callus forming its centre, the apex narrowly rounded; body beneath and legs glossy black, the two basal abdominal segments with a patch of silaceous scales at the side; claw-joint elongate, pitchy.

Allied to *S. Norrisii*, *S. Chevrolatii*, and *S. bipunctatus*, which have all a sutural stripe on each elytron, and which probably belong to one variable species.

*Hilipus mysticus.* (Pl. I., fig. 5.)

H. anguste oblongus, niger nitidissimus, femora in medio lutea, prothorace elytrisque lineis flavis, bene determinatis, perplexe dispositis, ornatis; rostro leviter punctato. Long. 5 lin.

*Hab.* Sarayacu.

Narrowly oblong, very glossy black, the femora, except at the base and apex, luteous, the prothorax and elytra with very distinct lines of yellow scales of complicated patterns; rostrum slender, not longer than the head and prothorax, moderately curved, finely punctured; antennæ pitchy; two basal joints of the funicle elongate, fourth, fifth, and sixth round; club not longer than the two basal joints of the funicle; eyes subapproximate; prothorax longer than broad, sparingly punctured, the yellow lines forming an oblong, somewhat quadrate figure extending nearly the whole length on each side; scutellum narrowly triangular; elytra nearly three times longer than broad, moderately convex, seriate-punctate, the yellow lines on each side at the base assuming a somewhat reniform figure, posteriorly a triangle with a loop in the centre enclosing the preapical callus, the apex of the elytra rounded; body beneath glossy black, without scales; femora smooth, luteous, except at the base and apex; tarsi rather slender.

A handsome species, allied to *H. catenatus*, but dissimilar in the pattern (as will at once be seen in the figures), and differing in the proportions formed by the yellow lines of the funicular joints.

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*Hilipus collectus.*

H. angustus, niger subnitidus, elytris maculis numerosis silaceis, plus minusve conjunctis, notatis; rostro prothorace longitudine æquali; prothorace angusto subcylindrico, carinula antice fere obsoleta. Long. 6 lin.

*Hab.* Chontales.

Narrowly oblong, glossy black, elytra with numerous silaceous spots more or less conjoined to form two principal patches on each; rostrum as long as the prothorax, curved, closely and coarsely punctured so far as the commencement of the scrobe; antennæ pitchy; first joint of the funicle rather longer than the second; club as long as the last six joints together; prothorax subcylindrical, longer than broad, the base truncate, a small silaceous spot on each side at the base, punctures very minute, scattered; scutellum oblong, rounded at the apex; elytra narrow, convex, preapical callus not prominent, finely lineate-punctate; body beneath and eyes glossy black, but the abdomen rather dull; claw-joint slender, much shorter than the rest of the tarsus.

A narrower form than *H. apiatus*, Ol., and differently sculptured, the spots on the elytra more aggregated, the rostrum and funicle shorter, &c.

*Hilipus pœcilus.*

H. anguste ovatus, niger nitidus, prothorace elytrisque ad latera maculis numerosis pallide griseis notatis, illo subconico. Long. 5½ lin.

*Hab.* Chanchamajo.

Narrowly ovate, glossy black, the prothorax and elytra with numerous round spots of pale greyish scales towards the sides; rostrum not longer than the prothorax, curved, closely and coarsely punctured at the base; antennæ pitchy; first joint of the funicle stouter and rather longer than the second; club not so long as the five last joints together; eyes approximate; prothorax subconic, longer than broad, the sides slightly rounded, sparsely punctured, a nearly obsolete carina anteriorly, and a curved depression posteriorly; scutellum narrow, obovate; elytra slightly rounded at the sides, seriate-punctate, punctures minute, preapical callus not prominent, body beneath glossy brown, nearly obsoletely punctured and with few setulæ; claw-joint rather slender.

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Allied to *H. collectus*, but less elongate, the prothorax more conical and differently sculptured, &c. Dr. Kirsch has two species from the above locality which I am unable to identify with any in my collection.

*Hilipus nudipennis.*

H. anguste ellipticus, glaber, nigrescens, vix nitidus, prothorace pone apicem obscure rubro, subtiliter punctulato; femoribus in medio nitide luteis. Long. 6 lin.

*Hab.* Macas.

Narrowly elliptic, smooth, blackish; the prothorax, except at the apex, dull darkish red; the elytra scarcely, or very slightly, glossy; head and rostrum glossy chestnut-brown, the latter as long as the prothorax, curved, not carinated, the base moderately punctured; antennæ pitchy, two basal joints of the funicle elongate, the last two slightly transverse; club shortly elliptic; eyes not approximate in front; prothorax longer than broad, a little incurved at the sides behind the middle, not glossy, a shade of black at the apex, minutely and sparingly punctured; scutellum oval, very glossy black; elytra narrow, broadest behind the shoulders, scaleless, except a minute scale in each puncture, finely seriate-punctate, the intervals very smooth, preapical callus very slight, the apex narrowly rounded; legs moderately elongate, very glossy black, middle of the femora luteous; metasternum dull red, rest of the body beneath glossy blackish.

Except that this species has the same particoloured femora as in *H. mysticus* and *H. catenatus*, I know of no ally but the following.

*Hilipus posticus.*

H. angustus, niger, fere opacus; prothorace antice carinato, pone apicem rufescenti; capite, rostro, pedibusque (femoribus in medio luteis) nitide nigris; elytris postice fascia subarcuata silaceo-squamosa ornatis. Long. 6 lin.

*Hab.* Sarayacu.

Narrow, black, nearly opaque; prothorax, except at the apex, reddish; elytra with a silaceous curved band posteriorly; the legs, except the luteous middle of the femora, glossy black; head and rostrum glossy black, the latter longer than the prothorax, curved, with three carinæ at the base, the intervals lightly punctured;

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antennæ pitchy, the two basal joints of the funicle moderately elongate, the last four transverse; club elliptic; prothorax scarcely longer than broad, a little incurved at the sides behind the middle, opaque reddish, the anterior border black; scutellum glossy, elytra elongate, nearly parallel at the sides, scales scattered and exceedingly minute, posteriorly a dense line of normal silaceous scales forming a slightly-curved band on each elytron—the concavity backwards, seriate-punctate, punctures very slight, each with a minute whitish scale, preapical callus not prominent; body beneath dark brown, metasternum luteous; legs slender.

Allied to the preceding, but with narrower, nearly parallel elytra, more convex, and without the posterior band.

*Hilipus respiciens.*

H. gracilis, nitide piceo-fuscus, lævigatus, femoribus ferrugineis, elytris singulatim prope apicem annulo albido ornatis. Long. 6 lin.

*Hab.* Chinchamajo.

Slender, dark pitchy brown, smooth and glossy; femora, except at the apex, ferruginous, each elytron at the base with a short transverse narrow band, and very near the apex a well-defined ring of silaceous scales; rostrum rather slender, curved, sparingly punctured, the scales commencing not far from the apex; eyes approximate; antennæ pitchy; two basal joints of the funicle subelongate, the second somewhat shorter; club as long as the five last joints together; prothorax equal in length and breadth, narrowed anteriorly, parallel at the sides from before the middle, sparingly punctured, slightly carinated anteriorly; scutellum rounded; elytra subparallel at the sides, seriate-punctate, punctures minute, preapical callus not prominent; body beneath and legs glossy brown, with a very few scattered setulæ; second abdominal segment longitudinally impressed; claw-joint slender.

An isolated species, but with the eyes approximate beneath as well as in front, as in *H. pœcilus*, with which it has no affinity otherwise.

*Hilipus vestitus.* (Pl. I., fig. 7.)

H. angustus, nitide niger, prothorace utrinque vitta lutea, elytrisque, humeris fasciaque irregulari pone

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medium exceptis, albido-squamosis; rostro a basi gradatim latiori. Long. 7 lin.

*Hab.* Macas.

Narrowly oblong, glossy black above, except a stripe in the middle (and the sides below) of the prothorax, the shoulders, and an irregular band on the elytra behind the middle, forming a lozenge-shaged patch on the suture, and spreading upwards to the shoulders at the sides, covered with closely-approximate whitish scales; rostrum not longer than the prothorax, gradually broader from the base to the apex, irregularly punctured; antennæ pitchy; the two basal joints of the funicle equal, the last obconic; eyes round, lateral; prothorax narrow, scarcely longer than broad, the sides from the middle parallel, obsoletely punctured; scutellum small, oblong; elytra three times the length of the prothorax, parallel at the sides, preapical callus nearly obsolete, apparently striate-punctate, but the punctures mostly masked by the scales; body beneath and legs glossy black, nearly scaleless; tarsi rather long, claw-joint much shorter.

An isolated species. The rostrum is more than usually dilated from the base to the tip. The colour on the upper surface seems to be a pale ashy, owing to the white scales not completely covering the derm.

*Hilipus empiricus.*

H. oblongo-ovatus, fuscus, silaceo-squamosus, lateribus squamulis in linea irregulari condensatis; rostro sat valde arcuato, basi in medio carinato et grosse punctato; elytris supra planatis. Long. 4 lin.

*Hab.* Chontales.

Oblong-ovate, dark brown, with silaceous scales at the sides of the prothorax and elytra close together, forming an irregular stripe receding from the external margin in the middle of the elytra, but united to its fellow by a narrow band posteriorly; rostrum somewhat slender, rather strongly curved, carinated, and coarsely punctured at the base; antennæ ferruginous, the two basal joints of the funicle of moderate length, the rest gradually shorter; club nearly as long as the last five together; eyes approximate both above and beneath; prothorax oblong, the sides rounded, but slightly incurved at the

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base, a narrow glossy carina anteriorly, coarsely punctured between the stripes, each puncture posteriorly with a raised border; scutellum rounded; elytra flattened above between the stripes, and coarsely seriate-punctate, preapical callus prominent; a few small scattered scales on the legs and body beneath; tarsi ferruginous.

A small species, bordering in some respects on *H. draco*, Fab., but much narrower and otherwise differentiated by rostrum, antennæ, &c. Its metathorax is very much longer than usual, and this throws the hind legs very much behind.

*Hilipus insidiosus.*

H. oblongus, fusco-piceus, squamis minutissimis albidis parce adspersus; prothorace granulis majusculis obsito, elytris rugoso-punctatis.

*Hab.* Morro Velho.

Oblong, pitchy brown, with a few narrow, very minute white scales; rostrum slender, much longer than the prothorax, chestnut-brown, glossy, moderately curved, and remotely and finely punctured throughout; antennæ ferruginous, funicle with the two basal joints of moderate length, the rest shortly obconic; club scarcely longer than the last three together; eyes subapproximate; prothorax transverse, well-rounded at the sides, contracted at the base, with many approximate, often reniform, tubercles, the middle with a stout carina, a small triangular space at the apex punctured; scutellum triangular; elytra broader thant he prothorax at the base, depressed along the suture, the anterior half nearly parallel at the sides, coarsely striate-punctate, the intervals with irregular more or less transverse folds, behind the middle a small spot of white scales, preapical callus prominent; body beneath glossy black, finely punctured; tarsi ferruginous.

Allied to *H. dorsosulcatus*, but with longer and more rugose elytra, and a carinated prothorax.

*Hilipus decorus.*

H. oblongus, subplanus, dense griseo-squamosus, setulisque adspersus, maculis duabus communibus basi, lateribus, fasciaque inter callos preapicales, fuscis; prothorace carinato. Long. 5—6 lin.

*Hab.* Amazon (Ega ?), Sarayacu.

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Oblong, closely covered with pale greyish scales, and here and there a long erect one; prothorax and elytra at the base, the sides, and an irregular band between the preapical calluses, deep rich brown; rostrum as long as the prothorax, curved, with three somewhat indefinite carinæ, the central one extending to the vertex; antennæ ferruginous; the two basal joints of the funicle rather short, the rest rounded, the last three slightly transverse; club as long as the last four together; eyes lateral, widely apart in front; prothorax as long as broad, narrowed anteriorly, the sides from the middle parallel, a slender carina extending from the apex nearly to the base, the disk remotely punctured, the two basal spots connected with corresponding spots on the elytra; scutellum rounded; elytra flattish above, slightly narrowing from the base to near the apex, seriate-punctate, the interstices transversely raised, the lateral stripe rising into a triangular patch at above the middle; body beneath and legs closely covered with silaceous scales and scattered hairs; legs rather slender.

An isolated species apparently; depressed, particularly on the elytra, and with an unusual width between the eyes.

*Hilipus spectator.* (Pl. II., fig. 1.)

H. oblongus, niger nitidus, prothorace plaga magna utrinque, elytris singulatim altera ante medium, annuloque postice, callo circumducens, albo-squamosis; rostro apicem versus sat lato. Long. 6 lin.

*Hab.* Cayenne.

Oblong, glossy black, a large patch on each side of the prothorax, another somewhat oblique just before the middle of each elytron, and a ring—enclosing the slight preapical callus—posteriorly, made up of minute white or cream-coloured scales; rostrum not longer than the prothorax, gradually broader to the apex, which is rather strongly dilated, basal half with scattered punctures; antennæ pitchy; first two joints of the funicle of nearly equal length, the last four transverse, together shorter than the club; eyes lateral; prothorax longer than broad, the sides behind the middle nearly parallel, the disk sparingly punctured; scutellum narrow, pointed behind; elytra nearly parallel to the middle, slightly depressed around the scutellum, seriate-punctate, punctures approximate; beneath smooth, glossy black.



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A species with a decided resemblance to *Ambates cretifer*, Pasc., but considerably larger.

*Hilipus suspensus.*

H. subovatus, fusco-piceus, setulis squamulisque ochraceis tectus, prothorace elytrisque fusco-vittatis et ochraceo-plagiatis; supra punctatus, in certu sito quam-quam granulatis. Long. 7 lin.

*Hab.* Ega.

Subovate, dark pitchy brown, more or less covered with slender and rounded ochraceous—inclining to orange—scales, with stripes and patches of brown and ochreous, above punctured, in certain lights as if granulate; rostrum longer than the prothorax, curved, closely punctured; antennæ ferruginous; scape elongate; first two joints of the funicle of moderate length; eyes approximate; prothorax as long as broad, subconical, the sides slightly rounded, disk with a dark brown stripe on each side, joined to an ochreous broader stripe exteriorly, the side below with a large silaceous spot; scutellum narrowly triangular, closely covered with silaceous scales; elytra moderately convex, the sides but slightly rounded, on the middle an oblique brown stripe terminated by an ochreous patch which nearly extends to the suture, the side before the middle with a silaceous spot, preapical callus not prominent; body beneath and legs chocolate-brown with a few scattered silaceous hairs; tarsi with a silaceous pubescence.

An isolated species.

*Hilipus tetanicus.*

H. angustus, subparallelus, fuscus, sparsa griseo-squamosus, vitta lata utrinque, apice ad suturam extensa, squamulis silaceis conferta; rostro crassiusculo. Long. 6 lin.

*Hab.* Cayenne.

Narrow, subparallel, dark brown, with scattered greyish scales; sides of the prothorax and elytra with a broad irregular stripe of crowded silaceous scales extending to the apex where it joins its fellows; rostrum stoutish, curved, the basal half slightly angulate; antennæ pitchy; first joint of the funicle somewhat longer than the second, the rest rounded; eyes subapproximate; pro-

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thorax longer than broad, rounded at the sides, coarsely punctured, a faint smooth line in the middle; scutellum triangular; elytra scarcely broader at the base than the prothorax, flattish in the middle, the sides nearly parallel, seriate-punctate, preapical callus slight; body beneath and legs chocolate-brown with a few scattered scales; tibiæ short; claw-joint small.

A peculiar narrow species with no obvious ally, but very like, only a longer outline, *Cholus rana* (Fab.). *Cholus* may be best distinguished from *Hilipus* by its anterior coxæ not bring contiguous at the base.

*Hilipus circulatus.* (Pl. II., fig. 2.)

H. ovatus, niger, opacus, vitta silacea laterali, antice posticeque confluentibus, instructus; femoribus fortiter punctatis. Long. 6 lin.

*Hab.* Ucayali.

Ovate, opaque black, a broad regular well-marked stripe running round the sides of the prothorax and elytra, and confluent at both extremities, but only extending to the margin of the elytra at the apex; rostrum much shorter than the prothorax, scarcely curved, and slightly glossy; antennæ piceous; club as long as the last five joints of the funicle; prothorax rather longer than broad, slightly rounded at the sides, the disk with a few lightly impressed punctures; scutellum small, rounded, glossy; elytra slightly convex, broadly rounded at the apex, punctures in lines, very minute; body beneath and legs rather glossy; femora coarsely punctured; claw-joint moderate, two basal joints narrowly triangular.

This species may be compared to *H. tricolor* (Ol.), and *H. medioxinus*, Boh., but differs from both in sculpture; there are several other species (*velamen*, *crocopelmus*, *lactarius*), but none have the stripes confluent.

*Hilipus hipporhinoides.*

H. subellipticus, piceo-fuscus, squamulis silaceis valde aspersis, instructus; elytris striato-punctatis, interstitiis alternis clavatis, rubidis, granulatis, apice singulorum rotundatis. Long. 6 lin.

*Hab.* Columbia.

Subelliptic, pitchy brown, with minute scattered silaceous scales; rostrum moderately curved, longer

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than the prothorax, sparingly punctured; antennæ ferruginous, two basal joints of the funicle rather elongate, the rest gradually shorter; club slightly longer than the last four joints together; eyes approximate, large, somewhat reniform; prothorax rather broader than long, narrowed at the base and apex, fully rounded at the sides, punctured anteriorly, elsewhere covered with large granules, each with a puncture at the top, the intervals setulose; scutellum oblong, densely covered with silaceous scales; elytra broadest behind the middle, contracted posteriorly, each rounded at the apex, preapical callus almost obsolete, striate-punctate, alternate interstices raised, reddish, and having a closely set row of mammilliform granules each with a single puncture posteriorly; body beneath and legs with scattered setulose scales; claw-joint small.

*Primâ facie* this species bears a strong resemblance to *Hipporhinus caffer* (Thunb.), an African form; it has also a certain affinity with *H. unguiculatus*, Guér., but, *inter alia*, that species has a punctured—not granulate—prothorax.

*Hilipus contumax.* (Pl. I., fig. 3.)

H. late ovatus, subsilaceo-squamosus, supra granulatus, prothorace utrinque, elytrisque plaga triangulari ab humerum usque fere ad callum apicalem extensa, læte fuscis notatis. Long. 8 lin.

*Hab.* Chamicuros.

Broadly ovate, granulate above, with silaceous or brownish scales, sides of the prothorax and a large triangular patch on the elytra extending from the shoulder to the apical callus, rich dark brown, bounded by a narrow line of silaceous; rostrum blackish brown, nearly straight, half as long again as the prothorax; antennæ piceous, club nearly as long as the funicle; eyes subapproximate; prothorax rather broader than long, rounded at the sides, sparingly granular on the disk; scutellum scutiform; elytra convex, broad at the base, only slightly rounded to the preapical callus, the apex beyond narrowly rounded, irregularly granulate above, the intervals coarsely punctured; body beneath and legs pitchy brown; claw-joint nearly as long as the rest of the tarsal joints together.

This species is perhaps best approximated to *H. bellicosus* (Hbst.), but the elytra are more curved, stouter,

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entire at the apex; the prothorax narrower, with few and smaller granules, &c.

*Hilipus cratosomoides.*

H. breviusculus, validus, niger, squamulis obscure silaceis adspersus, supra granulis numerosis nitidis instructus; antennis articulis duobus basalibus æqualibus; prothorace haud carinato; elytris subcordatis, apice rotundatis. Long. 8 lin.

*Hab.* Cayenne.

Shortly ovate, black, with numerous glossy granules above, and minute dull silaceous scales in the intervals; rostrum much longer than the prothorax, dull black, obsoletely punctured; antennæ ferruginous; the two basal joints of the funicle moderately elongate, the remainder shorter, and of nearly equal length; club rather stout; eyes approximate; prothorax scarcely broader than long, contracted anteriorly, parallel on the sides from the middle, granules small, scattered; scutellum scutiform; elytra subcordate, very broad at the base, irregularly convex, preapical callus moderately prominent, striate-punctate, punctures small, granules glossy, irregularly scattered, larger than those on the prothorax, each with a puncture on the top; body beneath and legs dull black with silaceous scales chiefly at the sides.

This fine species resembles *Cratosomus dumosus*, Boh. It has broader and shorter elytra than is usual in this genus.

*Hilipus severus.*

H. sat late ovatus, niger, squamulis silaceis plus minusve indutus, supra tuberculatus; rostro tenuato, prothorace fere duplo longiori; clava antennarum longiuscula, integra; prothorace utrinque pone apicem depresso. Long. 7 lin.

*Hab.* Parana.

Rather broadly ovate, black, with more or less scattered silaceous scales; rostrum slender, nearly twice as long as the prothorax, slightly curved, and closely punctured on its basal half, the scrobes commencing at the middle; antennæ pitchy, club entire, nearly as long as the funicle, first two joints of the latter short, the rest very transverse; eyes subapproximate; pro-

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thorax broader than long, a depression behind the apex divided by a longitudinal elevation, the sides fully rounded and tuberculate, a few tubercles also on the disk; scutellum triangular; elytra broadest at the base, irregular above and tuberculate, tubercles scattered, varying in size, the larger ones conical and with a puncture on the top, the intervals punctured, preapical callus prominent; body beneath and legs with dispersed hair-like scales.

This species, compared with *H. echinatus*, Boh., offers a remarkable discrepancy in the relative length of the club of the antennæ; in this the club—which shows no trace of being jointed—is nearly as long as the funicle, in the latter it is not longer than the last three joints together. In other respects the length of the rostrum and the median commencement of the scales are strongly-marked characters.

*Hilipus diversus.*

H. obovatus, niger, supra tuberculis nonnullis instructus, interstitiis squamulis fusco-silaceis dense tectus; funiculo antennarum breviusculo, articulo ultimo transverso. Long. 5 lin.

*Hab.* Parana.

Very near *H. retusus*, Boh., but uniformly coloured, a smaller prothorax with fewer tubercles, the elytra at the base more convex and more rounded at the sides, and much less expanded at the declivity above the apex; the funicle is much shorter than the scape, and the last joint is markedly transverse; the club is nearly as long as the last five joints together.

*Hilipus austerus.*

H. subovatus, obscure nigrescens, supra granulis tuberculisque instructus, interstitiis sparse griseo-squamosis; rostro longiusculo, cylindrico, perparum arcuato, elytris subparallelis. Long. 6 lin.

*Hab.* Parana.

Subovate or rather oblong, dull blackish, above granulate and tuberculate, the intervals with minute greyish, intermixed with whitish, scales; rostrum cylindrical, much longer than the prothorax, very slightly curved; antennæ pitchy; funicle short, two basal joints short,

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the rest very short, club as long as the last five together; eyes lateral; prothorax rather broader than long, well rounded at the sides, contracted at the base, granules scarcely glossy, scattered; scutellum scutiform; elytra slightly convex, somewhat depressed in the middle, rather abruptly declivous towards the apex, the sides subparallel, substriate-punctate, the interstices mostly with tubercles, sometimes trenching on the striæ, and intermingled with them a few glossy granules; preapical callus prominent, behind the callus at the side a dull brown patch without tubercles or granules; beneath numerous long silaceous scales, on the legs slender dispersed hairs; claw-joint short.

A longer and more parallel form than *H. echinatus*, Boh., and remarkable for its short funicle.

*Hilipus aspredo.*

H. sat late ovatus, niger, squamulis silaceis plagiatim varius, supra tuberculatus; rostro modice tenuato; clava antennarum haud elongata, articulata; prothorace minus tuberculato, apice paulo producto. Long. 6½ lin.

*Hab.* Brazil.

This species is nearly allied to the last, but is shorter and stouter, and marked with large patches of silaceous scales; the rostrum is shorter, the basal half not very closely punctured; the antennæ with a longer funicle, and a distinctly-jointed shorter club; the eyes are smaller; the prothorax less transverse, with fewer tubercles, some, indeed, little more than granules; the elytra shorter and more convex, and more abruptly declivous towards the apex; there is a slight variation of the tubercles, but probably they vary individually.

One of my specimens is labelled *H. signatipennis*, Dej. There is nothing apparently to suggest such a name.

*Hilipus intensus.*

H. subellipticus, nigrescens, silaceo-squamosus, supra granulatus; elytris plerumque pone medium plaga velutina fusca, albido-marginata, ornatis; inter oculos sulcato; rostro carinato. Long. 6 lin.

*Hab.* Colombia.

Subelliptic, blackish, with approximate silaceous scales, above granulate; elytra with a large irregular brown

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velvety spot at the side (most of which is behind the middle) bordered with whitish; rostrum cylindrical, longer than the prothorax, slightly curved, the base with five carinæ, separated by a reticulate puncturation; between the eyes a triangular groove, the eyes approximating in front but not beneath; antennæ pitchy, funicle elongate, the last joint only transverse; club shortly ovate; prothorax subtransverse, moderately narrowed at the apex, granules irregular, a few nearly contiguous; scutellum scutiform; elytra slightly convex, the sides to behind the middle nearly parallel, granules irregular in size and position, each with a pale seta directed backward, the intervals with here and there a puncture, velvet patches approximating at the suture; body beneath and legs dark brown, with scattered silaceous scales; claw-joint ferruginous.

In appearance this species closely resembles *H. ocellatus* (Fab.), but it is at once distinguished by its carinate rostrum; the same character will also distinguish it, *inter alia*, from *H. Faldermanni*, Boh.

*Hilipus grammicus.*

H. oblongo-ovatus, subsilaceo-squamosus, prothorace utrinque elytrisque in medio plaga fusca, oblique irregulari, notatis; prothorace angusto, basi constricto; elytris convexis, granulatis, basi bituberosis. Long. 5 lin.

*Hab.* Ega; Ucayali.

Oblong-ovate, with pale silaceous and brownish scales, and glossy scattered granules, stripe on each side of the prothorax and on the elytra a large obliquely irregular patch on each side rather behind the middle, but not extending to the margin, of a rich brown colour; rostrum rather shorter than the prothorax, nearly straight, two nearly obsolete carinæ at the base; antennæ pitchy, club nearly as long as the funicle; eyes not approximate in front; prothorax comparatively narrow, contracted at the base, sides slightly rounded; scutellum scutiform; elytra convex, slightly narrowing behind, at the base of each a well-marked tuber crowned with three or four granules; body beneath and legs with scattered silaceous scales; tarsi rather short.

Allied to *H. jocosus*, Boh., but with a longer prothorax, a shorter funicle, more scattered tubercles, and a somewhat different coloration, the patch on the elytra

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being directed backwards and terminating just above the callus. A specimen from Ucayali, in Bartlett's collection, only differs in its darker, or rather, brown coloration. I have *H. jocosus* from Chontales and from Brazil.

*Hilipus obesulus.*

H. breviusculus, nigro-fuscus, squamulis angustatis fulvis adspersus; elytris ampliatis, lateribus subparallelis, granulis transversis instructis; rostro longiusculo. Long. 5½ lin.

*Hab.* Rio Janeiro.

Rather short, everywhere dark brown, with sparse narrow fulvous scales; rostrum rather long, very slightly curved, punctured; antennæ glossy ferruginous; second joint of the funicle rather longer than the first, the rest oblong, third and fourth nearly equal in length, club not longer than the last three; eyes subapproximate; prothorax broader than long, much narrowed at the apex, not contracted at the base, the sides rounded, in the middle two transverse rows of granules, the intervals smooth; scutellum scutiform, a longitudinal line of fulvous scales in the middle; elytra much broader than the prothorax, very convex, substriate-punctate, punctures small, the interstices flat, with from three to five transverse granules on all except the first, preapical callus prominent, the apex round; claw-joint ferruginous, tips of the claws black.

The scattered scales only serve to give a paler brownish hue to this dull-looking species, which is allied to *H. polycoccus*, Boh.; this last species, however, has, *inter alia*, a short, thickish rostrum, a scrobiculate prothorax, and is a much narrower form.

*Hilipus caliginosus.*

H. oblongus, supra inæqualis, niger, granulatus, squamulis angustis griseis sat sparse tectus; tibiis anterioribus intus in medio spina valida armatis. Long. 7 lin.

*Hab.* Cayenne.

Oblong, unequal or irregular above, black, head and legs light chestnut-brown, numerous small glossy granules, the intervals covered with narrow greyish scales; rostrum not longer than the prothorax, closely



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and irregularly punctured at the base with numerous transverse greyish setæ; antennæ chestnut, two basal joints of the funicle short, fourth to the seventh transverse, club as long as the last four together; eyes lateral; prothorax broader than long, tubular at the apex, well rounded at the sides, and slightly contracted at the base, carinate, granules not crowded; scutellum scutiform; elytra broadest at the base, very slightly convex, rounded at the apex, granules very irregular, crowded at the base into a short raised line, elsewhere dispersed, but in rows at the sides, on each elytron at about the middle a somewhat abraded space forming a dark triangular patch, preapical callus prominent; body beneath glossy black with long grey scattered setulæ; legs stout; fore tibiæ armed on the inner edge with a sharp spine.

I know of no *Hilipus* with which to compare this species, which rather reminds one of a *Solenopus*. It is the *H. caliginosus* of Dejean's Catalogue. The remarkable spines on the anterior tibiæ may be only a sexual character.

*Hilipus rappa*. (Pl. II., fig. 4.)

H. oblongo-ovatus, piceo-fuscus, supra confertim granulatus, interstitiis parce aureo-squamosis; capite inter oculos foveato, rostro basi carinato et grosse punctato. Long. 5 lin.

*Hab.* Sarayacu.

Oblong-ovate, dark pitchy brown, with numerous granules above, the intervals with rich golden scales, the elytra behind the middle with a triangular scaleless patch, beneath and legs with long whitish setulæ; rostrum longer than the prothorax, curved, carinate and coarsely punctured at the base; between the eyes a well-marked depression; antennæ pitchy; first joint of the funicle stouter and rather longer than the second, the remainder transverse; club nearly as long as the funicle; prothorax subconical, not much contracted anteriorly, the sides smooth and glossy, granules large, not extending to the apex; scutellum oblong; elytra moderately convex, the sides very slightly rounded, preapical callus prominent, the apex narrowly rounded, granules occasionally confluent and masking the punctures except posteriorly, scales in parts confluent, forming short irregular transverse lines and spots (on the prothorax two lines on each side of the disk).

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A very distinct species, and noticeable for its short funicle. In general outline it perhaps resembles to a certain extent *H. Ziegleri*, Boh.

*Hilipus scabrosus.*

H. ovatus, niger nitidus; prothorace elytrisque esquamosis, tuberculis mammilliformibus confertim instructis. Long. 5½ lin.

*Hab.* Colombia.

Ovate, shining black, prothorax and elytra without scales, covered with closely set mammiliform tubercles, each mostly with a puncture at the top, those on the latter largest; rostrum not larger than the prothorax, slightly curved, finely punctured, scrobes commencing near the apex; antennæ ferruginous, first two joints of funicle moderately elongate, the four following moniliform, the last transverse; eyes lateral, shortly ovate; prothorax transverse, rounded at the sides, the tubercles flattish; scutellum transversely triangular; elytra not much broader than the prothorax at the base, thence gradually broader to near the apex, irregularly tuberculate, tubercles more or less united, generally in a transverse direction, several with a puncture at the top, the intervals pitted or punctured; body beneath shining black, without scales; legs with a reddish tinge.

Apparently an isolated species, which should probably form a distinct genus; at first sight it might be taken for a *Cherrus*. I have adopted M. Buquet's MS. name.

*Hilipus indutus.* (Pl. II., fig. 3.)

H. oblongo-ovatus, niger, supra squamositate grisescente dense tectus, granulisque setigeris adspersus; prothorace subcylindrico; elytris postice latioribus, et subito declivibus, super apicem tuberculis duobus setigeris obsitu. Long. 6 lin.

*Hab.* Macas.

Oblong-ovate, black, closely covered above with a greenish grey squamosity, and with several small granules, each bearing a stiff black seta; rostrum shorter than the prothorax, gradually broader towards the apex, striolated and roughly punctured anteriorly; antennæ ferruginous; funicle rather short; the club as long as the last five joints together; eyes rather distant

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in front; prothorax subcylindrical, the sides slightly rounded, the apex a little narrower than the base, granules, owing to the squamosity, not very apparent, scutellum triangular; elytra a little broader than the prothorax at the base, but gradually increasing in breadth posteriorly, abruptly declivous at the apex, shoulders rounded, two small tubercles at the base and two prominent ones above the apex, the latter covered with stiff setæ; body beneath and legs with silaceous scales; legs rather short.

In general outline like *H. retusus*, Boh., but with a dense, somewhat crustaceous, squamosity, in which the granules are almost imbedded, striolated rostrum, and other characters.

*Hilipus depictus.* (Pl. I., fig. 1.)

H. ellipticus, ater, vittis arcuatis silaceis, ornatus; rostro tenuiore, curvato; prothorace conico, in medio linea nitida elevata, instructo. Long. 6 lin.

*Hab.* Sarayacu.

Elliptic, intensely black, with lines of silaceous scales, more or less curved, on the prothorax and elytra; rostrum glossy, very slender, curved, not dilated at the apex, the base with a slightly elevated median line; antennæ pitchy, inserted behind the middle; first two joints of the funicle somewhat elongate; club obovate, rather short; eyes moderately approximate; prothorax conic, rather longer than broad, a narrow glossy very distinct elevated line in the middle, the disk on each side with a slightly curved silaceous stripe, and an oblong spot in front of the anterior coxæ; scutellum round, glossy; elytra subcordate, apex rounded, substriate-punctate, the punctures coarse, approximate, first three interstices with a few glossy granules, a silaceous stripe curving inwards at the shoulder, and another curving outwards at the apex; body beneath and legs with large scattered punctures, each enclosing a narrow silaceous scale; femora rather slender; claw-joint elongated.

This species has an unusually slender rostrum for its genus, and is also remarkable for its coloration, and the peculiar line on the prothorax.

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*Hilipus catenatus.* (Pl. I., fig. 4.)

H. oblongus, niger, nitidus, femora in medio lutea; fronte, prothorace elytrisque lineis conjunctis flavis, bene determinatis, ornatis; rostro quinque-carinato. Long. 6 lin.

*Hab.* Macas.

Oblong, glossy black; femora, except at the base and apex, luteous; front, prothorax and elytra with very distinct lines of yellow scales between the eyes, and on the front two lines united in the middle, the lines on the sides of the prothorax forming a broad triangle with the apex downwards, and those on the elytra at the side a lozenge-shaped figure before the middle joined by a looped pedicel to a transverse line at the base, and from just behind the middle to the apex a figure resembling the numeral 8; rostrum rather stout, narrower in the middle, the basal two-thirds with five well-marked carinæ, and a smaller and less distinct carina on each side of the central one; antennæ black, the scape paler or pitchy, the second joint of the funicle half as long again as the first; the club nearly as long as the last five joints together; eyes lateral; prothorax broader than long, a few fine punctures anteriorly; scutellum rounded, inclining to cordate; elytra subcuneiform, broadest at the base, moderately convex, seriate-punctate, preapical callus not prominent, the apex rounded; body beneath glossy black without scales; penultimate joint of the tarsi broadly bilobed.

The form, rostrum, disposition of the yellow lines, which may be compared to the links of a chain, and other characters, at once differentiate this species. It is, however, closely allied to *H. mysticus*, ante p. 67.

*Hilipus galeotes.*

H. breviter ellipticus, fuscus, supra tuberculis plurimis nitide nigris adspersus, interstitiis squamulis subaurantiacis dense tectis; elytris subcordatis, apicibus paulo divaricatis. Long. 7 lin.

*Hab.* Sarayacu.

Shortly ovate, dark brown, above with several glossy black conical tubercules—varying in size—irregularly scattered, the intervals closely covered with dull orange-

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coloured setulose scales; rostrum much longer than the prothorax, slightly curved, closely punctured at the base, the intervals granuliform; eyes not approximate; antennæ pitchy; second joint of the funicle twice as long as the first, the rest pyriform and gradually shorter to the sixth; club a little longer than the last three joints together; prothorax rather broader than long, the sides moderately rounded and a little contracted at the base, an oblong tubercle in the middle, with smaller ones towards the sides and behind; scutellum subscutiform; elytra subcordate, very broad at the base, substriate-punctate, punctures mostly masked by the scales, preapical callus not prominent, the apices slightly divaricate; body beneath and legs glossy brown, with numerous minute scales.

A stout species like *H. cratosomoides*, ante p. 77, but tuberculate, not granulate, and, *inter alia*, an unusually long rostrum, and the second joint of the funicle twice as long as the first.

*Hilipus monitor.*

H. sat late ovatus, niger, squamulis silaceis approximatis vestitus, supra tuberculis majoribus et minoribus plurimis instructus; rostro elongato; elytris basi haud depressis, in medio singulorum obscure fusco-notatis. Long. 6 lin.

*Hab.* Ucayali.

Rather broadly ovate, black, coverd with approximate silaceous scales, with numerous larger and smaller tubercles above, the elytra with an indefinite brown triangular patch; rostrum elongate, slightly stouter towards the apex; antennæ ferruginous, second joint of the funicle nearly twice as long as the first; prothorax well rounded at the sides, the disk with several glossy tubercles, and three narrow elevated ones just before the middle, the intervals between these concave; scutellum triangular; elytra rather short, broadest at the base, convex, several large and small tubercles on the back, the former mostly confined to the base and middle, behind the latter position the elytra is slightly depressed and marked with a semilunar blotch, preapical callus prominent, ending in a glossy point, the apex broadly rounded; body beneath and legs as in the preceding species, but the last abdominal segment coarsely punctured.

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Allied to *H. tuberculatus*, Boh., but stouter and more convex, the preapical callus not tuberculate, the apex itself broadly rounded, &c.

*Hilipus stellio.*

H. sat late ovatus, niger, squamulis griseis adspersus, supra tuberculis raris instructus; rostro modice elongato; elytris basi depressis, in medio plaga laterali fusca notatis. Long. 6 lin.

*Hab.* Pará.

Rather broadly ovate, black, with small greyish scattered scales, sparingly tuberculate above, elytra with a dark brown indefinite patch on each side at about the middle; rostrum of moderate length, gradually stouter towards the apex; antennæ ferruginous; funicle rather elongate; club as long as the last four together; prothorax subtransverse, rounded at the sides, the disk with a few small transverse and three larger tubercles, the intervals between the latter depressed; scutellum oblong, triangular; elytra rather short, broadest at the base, depressed and slightly concave to near the middle, where it is bounded on each side by an oblique elevation followed by a dark brown triangular patch, preapical callus sharply tuberculate; body beneath and legs with minute scattered hair-like scales; last segment of abdomen finely punctured.

Among the tuberculate species of *Hilipus* this is, *inter alia*, differentiated by the sculpture of the prothorax.

*Hilipus exustus.*

H. subellipticus, nigrescens, supra granulatus, griseo vel silaceo-squamosus; prothorace lateribus fuscis; elytris plaga fusca velutina semicirculari in medio notatis; rostro sat breviusculo, perparum arcuato. Long. 8 lin.

*Hab.* Colombia.

Subelliptic, blackish, with numerous small glossy black granules above, the intervals thinly covered with narrow greyish or silaceous scales, the sides of the prothorax brown, on the elytra at about the middle a dark brown velvet-like semicircular patch; rostrum not longer than the prothorax, cylindrical, very slightly curved, rather finely punctured at the base and on the forehead; antennæ brown; second joint of the funicle rather longer

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than the last four joints together; eyes subapproximate; prothorax broader than long; narrowed at the apex, the sides well-rounded and closely granulate, the granules less crowded on the disk; scutellum scutiform; elytra much broader than the prothorax at the base, thence gradually narrowing to the apex, slightly convex, striate-punctate, each interstice with a row of fine glossy black granules, which are more dispersed towards the apex, preapical callus prominent; body beneath and legs black, somewhat glossy, with scattered white hairs.

Allied to the preceding, but with a shorter and stouter rostrum, the elytra more convex, narrower behind, the patch confined to the middle, *i. e.*, not extending to the base, or to the external margin.

*Hilipus expletus.*

H. subellipticus, niger, squamulis silaceis sat dense tectus; prothorace elytrisque sparse granulatis, lateribus fuscis; rostro subtenue, elongato, parum arcuato. Long. 6 lin.

*Hab.* Chamicuros.

Subelliptic, black, rather closely covered above with silaceous scales, darker on the middle of the prothorax and base of the elytra, the sides dark brown, rising on the elytra towards the suture at about the middle, and forming a broadly triangular patch; rostrum pitchy, long, somewhat slender, very slightly curved, finely punctured, the scrobes commencing before the middle; eyes approximate; antennæ pitchy; second joint of the funicle half as long again as the first, the last four joints ovate and together nearly as long as the club; prothorax broader than long, the sides well rounded; scutellum narrowly cordate; elytra slightly concave along the suture, the sides very slightly rounded, preapical callus prominent, the apex narrowly rounded; body beneath and legs with scattered silaceous scales.

The coloration is after the style of *H. contumax*, but it is a much narrower species, less convex, with a more slender rostrum, longer funicle, &c. There is a slight mucro on the inner angle of the tibiæ.

*Hilipus molestus.*

H. breviter ellipticus, niger, tuberculis granulisque sat parce instructus, interstitiis plus minusve griseis;

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rostro longiusculo, subcylindrico, leviter punctato. Long. 5½ lin.

*Hab.* Amazon (Ega?).

Shortly elliptical, black, with tubercles and granules not very closely set, the intervals with more or less greyish scales, denser at the sides; rostrum rather longer than the prothorax, glossy black, subcylindrical, but a little broader at the apex; antennæ pitchy; funicle elongate, second joint half as long again as the first, third and fourth equal, each about the length of the first, the last three equal in length and breadth; club elongate-ovate; eyes large, nearly round, subapproximate; prothorax rather broader than long, rounded at the sides, disk in the middle with about a dozen transverse granules, at the sides the granules round and more crowded; scutellum narrowly scutiform; elytra broadest at the basal part, gradually tapering posteriorly, slightly convex, seriate-punctate, third interstice with three conic tubercles, a similar tubercle on the preapical callus, rest of the elytra with granules or small tubercles, crowded on the shoulders, scattered elsewhere; body beneath black with dispersed slender scales; legs pitchy, rather elongate.

Allied to *H. echinatus*, but with fewer and larger tubercles, more glossy, with fewer and rounder scales.

*Hilipus cynicus.*

H. subellipticus, nigro-fuscus, setulis silaceis vestitus, prothorace elytrisque confertim granulatis, illo disco linea silacea curvato laterali, his singulatim in medio macula magna fusca, intus silaceo-marginata, ornatis, apicibus divaricatis; rostro fere recto. Long. 8 lin.

*Hab.* Chontales.

Subelliptic, blackish brown, closely granulate above, the intervals with silaceous setulæ, prothorax with a curved line on each side of the disk, and each elytron on about the middle with a large dark brown spot having a silaceous margin towards the suture; rostrum not longer than the prothorax, nearly straight, carinated and closely punctured at the base; between the eyes an elliptic smooth space; antennæ pitchy; second joint of the funicle half as long again as the first; club as long as the last five joints together, elliptic; prothorax as long



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as broad, narrower at the base, sides fully rounded; scutellum convex, round; elytra substriate-punctate, punctures in parts obsolete, the striæ granulate as well as the interstices, preapical callus rather prominent, the apices divergent; body beneath and legs glossy brown, with scattered silaceous setulæ; claw-joint long.

In the style of coloration this species resembles *H. contumax* and others which have a brown patch on the sides, but the divaricate apices of the elytra and other characters of form and sculpture leave it without a near ally.

*Hilipus occultus.*

H. angustus, piceus, setulis adspersis subsilaceis, et in plagis irregularibus condensatis, vestitus; rostro incrassato quinque-carinato; antennis ad apicem rostri insertis; elytris subcuneatis, basi prothorace paulo angustioribus. Long. 4½ lin.

*Hab.* Chontales.

Narrow, pitchy, with generally scattered setulæ, but condensed and forming dingy irregular patches on the prothorax and elytra; rostrum stout, curved, tricarinate at the base and a second intermediate pair of carinæ towards the apex; antennæ apical; second joint of the funicle more than twice as long as the first, the rest oblong; eyes approximate; prothorax rather broader than long, the sides parallel posteriorly, a fine carina—but not extending to the base—with coarse punctures, the intervals granuliform, on each side of it, ocular lobes produced; scutellum cordate; elytra moderately convex, gradually narrowing from the base, the latter very little broader than the prothorax, the shoulders nearly obsolete, striate-punctate, the interstices closely granulate, preapical callus moderately prominent; a few setulæ on the body beneath and on the legs; tibiæ, especially the anterior pair, fluted or grooved; tarsi ferruginous.

A small dull-looking species remarkable, *inter alia*, for its cuneiform elytra and fluted tibiæ. Another genus in the future.

*Hilipus prionurus.* (Pl. I., fig. 2.)

H. anguste ellipticus, niger nitidus, prothorace utrinque vitta elytrisque maculis numerosis silaceo-squamosis, his apicem versus serratis, apice seipso producto-acuminatis, rostro breviusculo, quadricarinato. Long. 6 lin.

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*Hab.* Colombia.

Narrowly elliptical, glossy black, prothorax with a stripe on each side of the disk and the elytra with numerous spots composed of small silaceous scales, sides of the prothorax and of the body beneath closely covered by similar scales; rostrum rather stout, slightly curved, on each side two oblique carinæ, scrobes subapical; antennæ pitchy; second joint of the funicle nearly twice as long again as the first, the rest gradually shorter, the last four transverse, club short; prothorax broader than long, the sides slightly rounded, minutely punctured and somewhat corrugated or granulate behind; scutellum transverse; elytra a little broader than the prothorax at the base, slightly convex, the sides moderately rounded, produced and pointed at the apex (the margins of which are serrated), substriate-punctate, the intervals corrugated, preapical callus almost obsolete; legs pitchy black; tarsi covered with greyish hairs.

From the description, *H. acutissimus*, Boh., would seem to be nearly allied to this species, only that it is nearly double the *length*, and nothing is said about the remarkable serrature of the apical portion of the elytra.

*Hilipus miliaris.*

H. ellipticus, nigrescens, subnitidus, supra squamulis latiusculis albis maculatim dispositus; elytris apice productis, acute-acuminatis; rostro septem-carinato. Long. 7 lin.

*Hab.* Cayenne.

Elliptic, blackish, slightly glossy, with scattered minute narrow scales above, and, chiefly on the elytra, numerous white specks formed by the aggregation of small round scales; rostrum a little longer than the prothorax, slightly curved near the apex where the antennæ are inserted, with seven distinct elevated lines or carinæ; antennæ ferruginous, scape longer than the funicle and club together; second joint of the latter twice as long as the first, and as long as the three following together; prothorax conical, slightly rounded at the sides, somewhat closely and finely punctured, the intervals granuliform; scutellum subquadrate; elytra moderately convex, shoulders obtusely rounded, basal half parallel at the sides, the apex drawn out and sharply acuminate, striate-

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punctate, punctures large, approximate, interstices narrow and irregular; body beneath and legs rather closely covered with silaceous scales; posterior coxæ widely apart; tibiæ elongate.

This species ranks with *H. scapha*, Boh., *H. mortuus*, Thoms., and others with pointed elytra; its leading peculiarity is the seven-lined rostrum.

*Hilipus paradoxus.*

H. ovatus, rufo-piceus, elytris fulvo-maculatis; rostro longissimo; pedibus, femorum dimidio apicali nigro exceptis, fulvis; dente femorum extus crenato. Long. 5 lin.

*Hab.* Cayenne.

Ovate, reddish pitchy, elytra with numerous spots of fulvous scales, head and rostrum fulvous, the latter nearly as long as the whole insect, slender, curved, finely punctured, scrobe commencing near the middle; eyes nearly round, approximate; antennæ slender, first joint of the funicle half as long again as the second, third to the sixth gradually shorter; club lanceolate; prothorax slightly broader than long, rounded at the sides, rugosely punctate in the middle, some of the punctures filled with fulvous scales, a narrow smooth longitudinal line anteriorly; scutellum scutiform; elytra convex, seriate-punctate, punctures approximate, preapical callus not prominent, the apex rounded; body beneath and legs fulvous, distal half of the femora black, outer margin of the tooth crenate; tarsi broad, fringed; claw-joint small.

An isolated species, with a long rostrum, round eyes, and the femoral tooth crenate or denticulate on the external margin, as in *Prionomerus*; it should probably form a distinct genus.

SYPHORBUS.

*Rostrum* validum, paulo arcuatum; *scrobes* obliquæ. *Antennæ* articulo ultimo funiculi discreto. *Oculi* subfrontales. *Prothorax* transversus, apice constrictus, basi bisinuatus, infra profunde emarginatus. *Elytra* ampla, elevata, basi subrecta, prothorace latiora. *Pedes* breviusculi; *femora* clavata, infra dente armata; *tibiæ* breves bisinuatæ, apice bimucronatæ; *tarsi* latiusculi; *ungues* liberi. *Abdomen* segmentis duobus basalibus

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haud ampliatis. *Epimera* mesothoracica paulo ascendentes.

A remarkable species, which I have with the unpublished name of *Hilipus Leprieuri*,* Buq., is the sole representative of this genus. The principal characters separating it from *Hilipus* are the bimucronate tibiæ (the fringe of stiff hairs running partially along the convexity of the outer mucro as in many *Hilipoda*), and the partially ascending mesothoracic epimera; in general appearance it is very different from any member of that genus. The deep emargination of the propectus extends nearly to the anterior cotyloid cavities.

*Syphorbus turgidus.* (Pl. II., fig. 5.)

S. late ovatus, crassus, niger, squamulis albis silaceisque variegatus, elytra pone medium fascia flexuosa nigra ornata; supra granulis nitidis adspersus; prothorace transversim tricalloso. Long. 9 lin.

*Hab.* Cayenne.

Broadly ovate, stout, black, closely covered above with small, mostly silaceous, scales, but varied with white, the sides of the prothorax, scutellar region, and a flexuous band behind the middle of the elytra, black; rostrum much shorter than the prothorax, a slight carina with a short depression on each side, the scrobes beginning just before the middle; antennæ closely covered with silaceous hairs; funicle with the two basal joints equal, the third about half as long as one of them, the four last lenticular, and together a little longer than the club; eyes nearly round; prothorax transverse, the apex tubular, the portion behind more than twice as broad as long, with three calluses on its anterior border, the intermediate one slightly carinated, a curved whitish band across the middle, granules few and mostly basal; scutellum elongate-triangular, rising, with the elytra,

* Since a well-known entomologist named a butterfly in "honour" of the lender of a pill-box to its captor I have given up the practice; hence I have not adopted M. Buquet's name. Still, however, I may not give it up altogether. Many of the persons so honoured in the last generation or two are now unknown. Mr. Adam White's *Zopherosis Georgii* has doubtless been an enigma,—for he never published an explanation,—but as he informed me, it was intended to compliment George Gray and George Waterhouse, two naturalists not likely to be soon forgotten.

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abruptly from the base, the latter very irregular, broadest at the base, shoulders prominent, striate-punctate, interstices with a line of more or less distant granules, behind the flexuous black band silaceous spotted with white, each elytron with a bulging out behind the shoulders, and close to the outer margin a well-marked preapical callus, another just behind the middle and nearer the suture, the apices rounded; body beneath and legs mostly covered with ochraceous scales.

BYZES.

*Oculi* rotundati. *Tibiæ* apice bimucronatæ. Cæteris ut in *Hilipodo*.

A comparatively small species, peculiar as to form and coloration, which, from the two characters mentioned above, could not be suffered to remain in *Hilipus*.

*Byzes sciureus*. (Pl. II., fig. 7.)

B. obovatus, rufo-castaneus, supra granulatus, intervallis squamosis, prothorace linea laterali, elytrisque fasciis duabus arcuatis albidis ornatis, his basi prothorace haud multo latioribus. Long. 4½ lin.

*Hab.* Colombia.

Obovate, reddish chesnut, above with several small glossy granules, the intervals covered with greyish silaceous scales, disk of the prothorax on each side with a narrow stripe, and the elytra with two slender curved bands of yellowish scales, the one just before the other considerably behind the middle, the two bands separated by a broad darker brown band; rostrum as long as the prothorax, finely punctured; antennæ brownish ferruginous; second joint of the funicle scarcely longer than the first, the rest transverse; eyes nearly round; prothorax oblong, moderately narrowed at the apex, the sides rounded, granules transverse, scarcely crowded; scutellum cordate; elytra rather short, scarcely broader than the prothorax, their greatest breadth posteriorly, striate-punctate, interstices with somewhat approximate black glossy round granules; body beneath dark brown, sterna and sides of the first abdominal segment covered with greyish scales; femora stout, dark brown; tibiæ short, ferruginous-brown, the apex bimucronate.

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BACTRIUS.

*Characteres* ut in *Hilopodo*, sed *femora* mutica, et *tibiæ* anticæ flexuosæ, omnes haud mucronatæ, intus multidentatæ.

Other characters might probably be adduced, but seeing how uncertain is their value generically it is better to omit them until a congener be discovered; the two here given may be considered absolute; the character of the tibiæ distinguishing it from *Plethes*, which has the bisinuate and mucronate tibiæ of *Hilipus*. The two individuals in my collection differ considerably in size, the largest being probably the male. The habit is peculiar, but reminds one in a slight degree of *Lophotus vitulus* (Fab.)

*Bactrius lophotoides.* (Pl. II., fig. 9—side view.)

B. oblongus, umbrinus, silaceo-squamosus, setulis nigris adspersus; prothorace apice elevato, bituberculato. Long. 3½—5¼ lin.

*Hab.* Espiritu Santo.

Oblong, umber-brown, with round approximate silaceous scales, and scattered black setulæ; rostrum rather shorter than the prothorax, stout and nearly straight, with three carinæ in front; antennæ ferruginous; first joint of the funicle longer than the second and third, the second a little longer, the three following elongate-turbinate, the last nearly as long as the third; the club scarcely longer than the last two together; eyes lateral, acuminate below; prothorax oblong, broadest anteriorly, the base truncate, the apex elevated, and having two erect approximate tubercles topped with stiff black scales; scutellum rounded; elytra a little broader than the prothorax at the base, gradually rising posteriorly into a slight gibbosity, then descending abruptly to the acuminate apex, the sides slightly rounded, seriate-punctate, punctures rather large, each with a white scale in the centre; body beneath and legs more or less scaly and setulose; the last segment of the abdomen long and narrow.

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ARNITICUS.

*Scrobes* apicales vel subapicales, rostro infra antice paulo dilatato. *Tibiæ* submucronatæ, mucrone horizontali, haud curvato. Cæteris fere ut in *Hilipodo*.

The rostrum in this genus is so dilated beneath as to show the scrobes about half their length when viewed from above; this character occurs, although rarely, in *Hilipus*, at least as the genus now stands. The mucro, however, at the apex of the tibiæ is a more important character, but which is also shared by the next genus, from which it may be distinguished by its normal elytra. The type is *Hilipus gladiator* of M. Jekel's MS. The second species differs structurally in the scrobes commencing a little further away from the apex of the rostrum. *A. brevicollis* has a shorter prothorax and longer elytra in proportion.

*Arniticus gladiator*. (Pl. I., fig. 8.)

A. ovatus, fuscus, setulis fulvis sat dense tectus, plagis pallidioribus variegatus, supra granulatus; elytris convexis, striato-punctatis, interstitiis et sutura ad apicem, elevatis; rostro basi striolate. Long. 8 lin.

*Hab.* Brazil.

Ovate, dark brown, rather closely covered with fulvous setulose scales, the disk of the prothorax at the sides with an oblong patch, each elytron with a smaller one near the shoulder, and a large cordate one—common to both elytra, and enclosing a lozenge-shaped fulvous spot—posteriorly and nearly touching the apex, pale silaceous, but whitish towards the margins; rostrum much longer than the prothorax, slightly curved, finely striated at the base, and punctured; a small but very deep fovea between the eyes, the latter somewhat reniform; antennæ brown; second joint of the funicle twice as long as the first; club only a little longer than the last three together; prothorax transverse, well rounded at the sides, a slightly elevated line in the middle, granules small, and in the middle of the disk rather crowded; scutellum oblong-cordate; elytra rather broad, a little incurved at the sides, abruptly convex from the base, but less so posteriorly, striate-punctate, punctures minute, interstices sharply raised, each bearing a row of small glossy granules less in size and number on the

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posterior half, but the sutural margin throughout with larger uniform granules, and towards the apex elevated or ridged, the apex itself rounded, preapical callus moderately prominent; body beneath and legs with numerous minute narrow silaceous scales.

*Arniticus gibbosus.*

A. latiusculus, subelliptícus, niger, squamulis silaceis sat confertim instructus; prothorace brevi, leviter granulato, elytris in medio gibbosis, striato-punctatis, interstitiis irrregulariter granulatis, postice singulatim plaga albida notatis. Long. 6 lin.

*Hab.* Brazil.

Rather broad, subelliptic, black, with glossy granules above, the intervals closely covered with silaceous scales; rostrum longer than the prothorax, somewhat robust, scarcely curved, coarsely punctured at the base; antennæ rather long, the second joint of the funicle three times as long as the first, the rest gradually shorter, club not longer than the last four together; eyes shortly ovate; prothorax nearly twice as broad as long, contracted at the apex, the side well rounded, numerous small glossy granules irregularly scattered on the disk, few or none at the sides, in the middle a short raised line; scutellum narrowly triangular, covered with white scales; elytra broader than the prothorax, shoulders and sides rounded to the apex, convex to the middle, then gradually depressed to near the apex, when it again rises between the two preapical calluses, striate-punctate, the alternate interstices raised into an irregular ridge of sloping granules, each generally having one or occasionally two white scales at the base posteriorly, the other interstices with a few normal granules mostly confined to the anterior half; body beneath and legs with narrow silaceous scales; tarsi rather dilated; claw-joint small.

A peculiar species; in some respects, especially in the shortness of the prothorax, approaching *A. brevicollis;* without, however, claiming too close an affinity, I think it may well stand as a congener of the above.

*Arniticus brevicollis.*

A. oblongus, piceus, squamulis angustatis silaceis indutus; elytris modice convexis, pone medium macula



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obliqua albida notatis; prothorace brevi, carinato, apice tubulato; rostro basi rugoso-punctato. Long. 6 lin.

*Hab.* Morro Velho.

Oblong, pitchy, with minute narrow greyish or silaceous scales, an oblique whitish spot towards the apex of each elytron; rostrum of moderate length, nearly straight, very roughly punctate, the scrobes commencing near the apex; antennæ pitchy; first two joints of the funicle rather elongate, especially the second, the rest short, the last four transverse, but, together, as long as the club; prothorax nearly twice as broad as long, the apex much contracted and tubular, closely punctured, the intervals granuliform, a slender glossy raised line or carina in the middle; scutellum scutiform, densely covered with white scales; elytra moderately convex, parallel at the sides, broadly rounded at the apex, striate-punctate, punctures approximate, the interstices slightly raised and having a granuliform appearance, preapical callus not prominent; legs rather short.

### Chœrius.

*Elytra* planata, lateribus abrupte declivibus, cæteris fere ut in *Hilipodo*, sed *scrobes* apicales, dorsum rostri incipientes. *Tibiæ* fere rectæ, apice submucronatæ, mucrone horizontali, haud curvato.

In this genus the commencement of the scrobes is above, not at the sides of the rostrum. The tibiæ are somewhat peculiar, the mucro at the apex is attached for the greater part of its length within the corbel of the tibia, not proceeding directly from the outer angle only, and is not curved; on the inner side the apex is bordered by a row of stiff hairs, from which the mucro is free. The type is without beauty, and might possibly be thought to be comparable to a gigantic *Bagous*.

#### *Chœrius squalidus.*

C. oblongus, obscure niger, supra squamositate grisea interrupte vestitus; elytris regione suturali planatis, transversim rugosis. Long. 6 lin.

*Hab.* Colombia.

Oblong, dull black, with a greyish interrupted squamosity; rostrum stout, not longer than the prothorax, slightly curved, a carina from the base to the apex, the

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latter notched on each side; antennæ pitchy, second joint of the funicle half as long again as the first, the rest rounded and mostly equal in length and breadth; club short; eyes lateral, ovate; prothorax markedly longer than broad, moderately contracted at the apex, the sides slightly rounded to the middle, coarsely pitted above, the intervals granuliform, a narrow elevated line nearly throughout; scutellum cordate; elytra broader than the prothorax, the sides nearly parallel, flat along the sutural region, declivous at the apex, sloping towards the sides and abruptly bent down at the shoulders, the preapical callus prominent; body beneath and legs with numerous silaceous scales.

PLETHES.

*Characteres* ut in *Hilipodo* sed *femora* mutica vel submutica.

There is no character so constant in *Hilipus* as the strongly-marked femoral tooth, so that, in so large a genus, it is a matter of convenience to exclude all species that do not possess it. There are other characters in common, but which, having regard to *Hilipus*, can hardly be considered of generic importance.

*Plethes albolineatus.* (Pl. II., fig. 6.)

P. pyriformis, niger, subnitidus, elytris lineis albosquamosis ornatis, apice rotundatis. Long. 8 lin.

*Hab.* Colombia.

Pear-shaped, black, somewhat glossy, the elytra with narrow lines of pure white scales; rostrum of moderate length, slightly curved, gradually broader from the base to the apex, smooth, finely punctured, scrobes running beneath; antennæ black; two basal joints of the funicle equal, the rest gradually shorter and broader, the last as broad as the club (of which it looks as if it formed a part); eyes lateral; prothorax small, subcylindrical, transverse, abruptly constricted anteriorly; scutellum subscutiform; elytra shortly ovate, broadest behind the middle, punctate-striate, the alternate interstices raised, smooth; the second, fourth, and sixth (the two latter joined posteriorly) filled with white scales, the apex rounded; body beneath and legs smooth, glossy; the abdominal segments finely punctured.

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*Plethes verrucosus.*

P. pyriformis, niger, subnitidus, elytris concoloribus, verrucis majusculis omnino tectus, apicibus obtuse productis. Long. 7 lin.

*Hab.* Colombia.

Pyriform, black, glossy, elytra entirely black and covered with large warts or tubercles; rostrum rather stout, smooth, finely punctured; scrobes and antennæ as in the preceding species; eyes lateral; prothorax small, transverse, rounded at the sides and granulate, the disk smooth, abruptly constricted anteriorly; scutellum subscutiform; elytra shortly ovate, broadest behind the middle, entirely and closely covered with large oblong flattish tubercles arranged in rows, the longitudinal intervals very narrow with very few punctures, apex of each elytron produced in a short rounded knob; body beneath and legs glossy, smooth, the abdominal segments minutely punctured.

The sculpture alone will at once distinguish this species from the preceding.

ACALLESTES.

*Characteres* ut in *Hilipodo* sed *scutellum* nullum, et *elytra* connata, basi utrinque rotundata. *Tibiæ* bimucronatæ.

At the first glance this Curculionid might readily be passed over as an *Acalles;* except, however, in the characters mentioned above, it could not be well separated from *Hilipus* as the genus stands at present. The straight, not bisinuate, base of the prothorax might also be cited, were it not that a close approach to this is made in some of the *Hilipoda*. The metasternum is unusually short.

*Acallestes talpa.* (Pl. II., fig. 8.)

A. obovatus, nigrescens, pallide silaceo-squamosus, supra granulis nitidis nigris obsitus; elytris striato-punctatis. Long. 4¼ lin.

*Hab.* Colombia.

Obovate, blackish, with round, brownish silaceous scales, and numerous glossy black granules above, those on the prothorax with a pale narrow seta at the base directed forwards, those on the elytra with a similar seta

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directed backwards; rostrum rather stout, about as long as the prothorax, clothed with erect silaceous setiform scales; antennæ pitchy; second joint of the funicle nearly twice as long as the first, the last three transverse; prothorax broader than long, moderately narrowed at the apex, the sides rounded, the base nearly straight, and narrower than the side, granules scarcely crowded; elytra convex, rising considerably above the prothorax, shortly obovate, striate-punctate, interstices slightly elevated, each with a row of not very close glossy black granules; body beneath and legs with narrow scattered scales; femora stout; tibiæ short, bimucronate.

IRENARCHUS.

*Rostrum* tenuatum, arcuatum; *scrobes* laterales. *Antennæ* graciles, articulo ultimo funiculi discreto. *Oculi* ovati, laterales. *Prothorax* modice elongatus, basi bisinuatus, infra profunde emarginatus. *Elytra* ovata, basi projecta, quam prothorace paulo latiora. *Femora* sublinearia mutica; *tibiæ* fere rectæ, apice mucronatæ; *tarsi* latiusculi; *ungues* connati. *Metasternum* breve. *Abdomen* segmentis duobus basalibus ampliatis.

The deep emargination of the propectus, allowing the rostrum to lie close to the under surface in repose, would seem to show an affinity in this genus to some of the apostasimerous groups. The type is a large and peculiar insect from Colombia, described by M. James Thomson under the name of *Hilipus fossilis* (Arcan. Nat., p. 259.)

TARTARISUS.

*Femora* incrassata, haud clavata, dente minuto instructa. *Tibiæ* rectæ, compressæ. Cæteris fere ut in *Hilipodo*.

The type of this genus, *Hilipus signatipennis*, Blanch., and *H. Hopei*, Boh., which is unknown to me, are especially mentioned by Lacordaire as "isolated forms," which should form distinct genera. The differential characters of the former are found in the non-clavate femora and straight compressed tibiæ.

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## Explanation of Plates.

### PLATE I.

Fig. 1. *Hilipus depictus.*
2. ,, *prionurus.*
3. ,, *contumax.*
4. ,, *catenatus.*
5. ,, *mysticus.*
6. ,, *medullosus.*
7. ,, *vestitus.*
8. *Arniticus gladiator.*

### PLATE II.

Fig. 1. *Hilipus spectator.*
2. ,, *circulatus.*
3. ,, *indutus.*
4. ,, *vappa.*
5. *Syphorbus turgidus.*
6. *Plethes albolineatus.*
7. *Byzes sciureus.*
8. *Acallestes talpa.*
9. *Bactrius lophotoides.*

C.s. Fore tibia and first tarsal joint of *Chœrius squalidus.*
S.t. Ditto, *Syphorbus turgidus.*
H.c. Ditto, *Hilipus catagraphus*, Germ. (type of the genus).
A.t. Ditto, *Acallestes talpa.*
A.g. Ditto, *Arniticus gladiator.*
B.l. Ditto, *Bactrius lophotoides.*

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## VI. *Descriptions of new Genera and Species of* Rhynchota *from Madagascar.* By W. L. Distant.

[Read March 2nd, 1881.]

Plate III.

The following undescribed forms have come into my possession since I communicated my last paper to the Society on the Rhynchotal fauna of this Island (Trans. Ent. Soc., 1879, p. 209), and I was again impressed, as when working the previous collection, with the somewhat aberrant structural peculiarities of these insects. The two new genera here described are very distinct and remarkable in structure compared with the other genera of the subfamilies to which they belong, whilst species belonging to African genera form usually distinct sections of those genera.

## HEMIPTERA-HETEROPTERA.

### PENTATOMIDÆ.

### PENTATOMINÆ.

*Dalpada subflava*, n. s.

Luteous, irregularly covered with greenish punctures. Head somewhat thickly punctate, with the lateral lobes a little longer than the central. Antennæ luteous, with the second, third, and fourth joints subequal, basal, apex of third and fourth (excepting base) joints greenish, fifth mutilated. Pronotum with a strong transverse impression a little before medium, the lateral angles acutely subprominent, the lateral margins sinuated about medium, from whence to apical angles they are obtusely crenulated. Scutellum and corium with a number of irregular luteous levigate markings, inconstant in character and varying in different specimens. Membrane pale hyaline, with the nervures pitchy. Connexivum luteous, with a dark greenish patch on base and apex of each segmental incisure. Underside of body and legs pale luteous; prosternum and mesosternum with a few greenish markings; apices of femora, bases



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and apices of tibiæ and tarsi greenish. Margins of abdomen marked as above. Long. 15 to 18 mm.

*Hab.* Antananarivo.

This species is allied to *D. vittata*, Sign., from which it differs by the length of the lateral lobes of the head, by the sinuated lateral margins of the pronotum, and by the different colour of the abdomen beneath. It is a most inconstant species both in size and colour, the greenish markings beneath being sometimes almost obsolete. The levigate markings above are also of a very variable character; in one specimen there are four distinct irregular spots on the pronotal transverse impression, in two specimens the basal angles of the scutellum are also levigate, whilst in a third the apex of the scutellum is brightly luteous. I have before remarked a like inconstancy in an Indian species, *D. varia*, Dall. (Ann. & Mag. Nat. Hist., ser. 5, vol. iii., p. 48).

*Dalpada capitata*, n. s. (Pl. III., fig. 1.)

Luteous, sparingly and irregularly covered with greenish punctures, which are most inconstant in hue in different specimens. Head very long and subtriangular, lateral lobes very much longer than central, with their apices obtuse. Pronotum with a strong transverse impression, the lateral angles subprominent and subacute, and the lateral margins obtusely denticulated. Scutellum with the basal angles obscurely levigate, the apex more or less luteous. Corium with a few obscure levigate markings, of which the largest, most prominent, and constant is on disk. Membrane hyaline, with the nervures pitchy. Abdomen above pitchy, with the apical segment testaceous; connexivum luteous, with the apex of each segmental incisure greenish. Body beneath and legs luteous, femora spotted and streaked (especially towards apex), bases and apices of tibiæ, tarsi, lateral margins of head, sternum, and abdomen (the last obscurely) greenish. Antennæ greenish, with the second and fourth joints subequal, third shorter (fifth mutilated). Long. 15 mm.

*Hab.* Fianarantsoa.

Allied to *D. liturifera*, Walk., but differs by the great prolongation of the lateral lobes of the head.

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ARTIAZONTES, n. g.

Body subovate, depressed. Head armed on each side in front of eyes with long spines; lateral lobes much longer than central. Antennæ five-jointed, simple. Rostrum moderate, in type reaching intermediate coxæ. Pronotum with the lateral margins strongly spined, the lateral angles prominent. Scutellum triangular, long, apex passing base of membrane. Abdomen not sulcated.

This peculiar genus I place next to *Phricodus*, with which it agrees in the distinct and remarkable spinous structure of the head, but differs in having the antennæ five-jointed and simple.

*Artiazontes alatus*, n. s. (Pl. III., fig. 2.)

Ferrugineous; head, pronotum, and scutellum with a narrow pale central longitudinal luteous line (obscure on head). Head with the lateral lobes much longer than the central, and armed on each side with five strong spines, two apical and three lateral, central lobe somewhat indistinctly margined with pitchy; the head is also obscurely transversely striated. Pronotum somewhat thickly punctate, and strongly and transversely rugulose, lateral angles produced into flat processes directed upwards and forwards, with the outer margins finely denticulated, lateral pronotal margins very strongly denticulated. Scutellum thickly punctate, somewhat rugulose at base. Corium thickly punctate. Membrane cinereous, with the nervures pitchy. Underside of body and legs somewhat paler than above, femora somewhat spotted and streaked with pitchy markings, especially towards apex. Antennæ with the second and third joints subequal in length, fourth and fifth also subequal in length, but longer than second and third, and fuscous at apices. Rostrum almost reaching intermediate coxæ. Long. 11 mm. Lat. pronot. angl. 6 mm.

*Hab.* Fianarantsoa.

TESSARATOMINÆ.

DELOCEPHALUS, n. g.

Body obovate; head large, subquadrate, central lobe very small, lateral lobes very much longer, wide, and meeting together in front. Pronotum deflexed anteriorly, lateral margins ampliated and angulated at apices.



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Scutellum broad, subtriangular, gradually decreasing in width for about two-thirds from base, when it is somewhat straightened to apex, which is rounded. Abdomen extended beyond apical half of corium. Rostrum not reaching intermediate coxæ; antennæ five-jointed; abdomen and sternum unarmed; tarsi three-jointed.

The large subquadrate head is sufficient to separate this genus from all the other genera of *Tessaratominæ*; its other structural characters ally it to *Oncoscelis*.

*Delocephalus miniatus*, n. s. (Pl. III., figs. 3, 3 *a*.)

Red; head, pronotum, and scutellum, finely punctate and rugulose, corium finely punctate, membrane ochraceous. Body beneath and legs concolorous and finely punctate. Antennæ with the second, third, fourth, and fifth joints subequal, or second a little shorter; luteous, apical half of fourth, and the fifth joint piceous. Anterior margins of pronotum denticulated, lateral margins ampliated and obtusely angulated anteriorly. Long. 17 mm. Max. lat. 11 mm.

REDUVIIDÆ.

*Reduvius bicoloripes*, n. s.

Testaceous; head, antennæ, rostrum, apices of femora, tibiæ, tarsi, and a transverse fascia near apex of corium, which is narrowly extended along inner margin of membrane, black. Legs strongly pilose. Pronotum with the anterior lobe and disk of posterior lobe, centrally and longitudinally sulcated; membrane extending beyond apex of abdomen. Long. 11 mm.

*Hab.* Antananarivo.

Allied to *R. gulosus*, Stål, but differs in the colour of the underside of head and legs. The sulcation of the posterior lobe of the pronotum does not join that of the anterior lobe, but is confined to the posterior and discal portion only.

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## HEMIPTERA-HOMOPTERA.

### CICADIDÆ.

*Platypleura gigas*, n. s. (Pl. III., figs. 4, 4 *a*.)

♂. Closely allied in colour and markings to *P. madagascariensis*, Dist. Differs by its much larger size, much broader and more ovate body; tegmina more arched at base, with the membrana costæ very greatly dilated, and without the central dark spot possessed by the other species. Drum flaps large, unicolorous, overlapping at centre, and covering the first and lateral portions of second abdominal segment. Long. 34 mm. Exp. tegm. 122 mm.

| | |
|---|---|
| Drum flaps not covering first abdominal segment . . . | *P. madagascariensis*. |
| Drum flaps covering first and lateral portions of second abdominal segment . . | *P. gigas*. |

### FULGORIDÆ.

#### FLATINÆ.

*Flatoides dealbatus*, n. s. (Pl. III., figs. 5, 5 *a*.)

♀. Pale ochraceous; tegmina above concolorous, with a large central cretaceous spot, narrowly, obscurely and irregularly margined and spotted with fuscous; membrana costæ with a pale greenish white levigate spot at the base of inner margin; posterior discal portion, excluding outer margin fuscous, with irregular cretaceous markings. Tegmina beneath suffused with cretaceous. Wings obscure hyaline, with the nervules darker. Underside of body and legs concolorous. Head long, apex suberect with the angles rounded; above concave, with a distinct spine midway on each lateral margin, tegmina twice as long as broad; rostrum passing posterior coxæ; posterior tibiæ with two distinct spines of which the apices are fuscous. Long. body, including anal append., 17 mm. Long. tegmina (unexpanded), 20 mm. Lat. tegmina (together), 20 mm.

This species, both in size and markings, is quite distinct from any other with which I am acquainted either by personal examination or description, and is the largest of the genus yet described from Madagascar.

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## Explanation of Plate III.

Fig. 1. *Dalpada capitata.*
2. *Artiazontes alatus.*
3, 3 *a*. *Delocephalus miniatus.*
4, 4 *a*. *Platypleura gigas.*
5, 5 *a*. *Flatoides dealbatus.*

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VII. *On the habits and affinities of the Hymenopterous genus* Scleroderma, *with descriptions of new species.* By Sir Sidney Smith Saunders, C.M.G.

[Read November 3rd, 1880.]

At the last meeting of this Society I exhibited a series of specimens of a new species of *Scleroderma*, which had emerged from a compact mass of delicate white cocoons occupying a portion of the empty cell of a *Raphiglossa*—one of the solitary wasps—which had constructed its larval receptacles in a desiccated briar recently obtained from Epirus. These *Sclerodermæ* were developed in September last from ova of the previous year, the briar having been cut and forwarded in the preceding month of December; and, in relating the following particulars of their habits and economy, I avail myself of the occasion to offer some remarks on the affinities of the genus, which have long been the subject of controversy.

The circumstance of finding this brood in such a locality would seem to indicate that the parent *Scleroderma* must have deposited her ova in the caterpillars stored in this cell by the original constructor for her own progeny; and that, in like manner, those which are found in houses—bringing themselves disagreeably to notice by their stinging propensities—may find a suitable domicile in the cells of *Odyneri* perforating the posts of verandahs, &c., and providing a similar nutriment for their larvæ. Mr. Haliday, however, took several specimens of both sexes of a *Scleroderma* in a chamber where *Attagenus Pellio* abounded in the mattrasses stuffed with the husks of Indian corn; and on another occasion he found a swarm of the former between the sheets of a bed upon the sofa of a house at Lucca, probably stuffed, as he conceived, with hair or wool infested by the latter. (Thes. Ent. Oxon., p. 170; Hal. in litt.)

The *Sclerodermæ*, found alive on the present occasion, were closely congregated about their cocoons, having probably remained unnoticed for several days; and prominent among them was one furnished with elongate



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opaque white wings, extending beyond the extremity of the abdomen, quiescent like the others.

It could scarcely be doubted that, among upwards of twenty specimens, both sexes would be represented; this winged individual, furnished with three ocelli towards the base of the head (which none of the others possessed), being presumably the male, as corresponding with the alary and ocellated characters of that sex. In other respects, however, this specimen exhibited a general similarity to the apterous females, the abdomen coinciding therewith in structural details; so that, notwithstanding the remarkable circumstance of the absence of any male, this was only an abnormally developed female invested with some of the prerogatives of both sexes; nor is this a solitary instance of such an anomaly, for Professor Westwood, in his crowning work, the 'Thesaurus Entomologicus Oxoniensis,' has recorded the circumstance that Mr. Thwaites had sent him "a species from Ceylon, the female of which has wings" (p. 170). I should add that no such discarded appendages were found in the cell, but a considerable number of very minute smooth white elongate-oval particles, of uniform size and shape, were dispersed about the interior, these being readily soluble, and apparently constituting the fœcal deposits of the larvæ during the period of nutrition.

As regards the males, these might have been developed later from the remaining cocoons, wherein certain immature individuals were found, as subsequently adverted to, which might possibly have supplied the void had not these receptacles been molested for internal investigation. The fact of these females having been obtained from a briar-cell of the previous year, while allowing some latitude for climacteric retardation in the sequel, serves to indicate that this was the ordinary summer brood, and that no other could intervene between these females and their posterity of a corresponding period, their transformations having extended over more than twelve months, namely, from July or August of the one year to September of the next. I have, however, met with several females of this species hybernating in the snags of fig trees, which might obtain an earlier habitat for their progeny, and enable the latter to complete their metamorphoses within a shorter period. Thus the *Pelopæus spirifex* sometimes emerges from larval-cells of

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the same year, while others remain in the pupal stage until the following season. So also with the *Cryptus* parasitic thereon; and a remarkable instance of similar incongruity has been recorded by the late Mr. F. Smith in *Osmia parietina* (Cat. Brit. Bees, 2nd edition, 1876, p. 150).

Having several miscellaneous species of living larvæ from the same locality, I placed a variety of these at the disposal of the *Sclerodermæ*, together with other tempting baits (having first secured the winged specimen), all being neglected alike. Three of the brood, which survived longer than the rest, had been fumigated with sulphur, together with others, and subsequently submerged in water during a whole night, but they resuscitated on the morrow. They were then treated with cyanide of potassium for some time; after which one again revived when expanded and gummed on a card.

In a few of the cocoons (four or five) the adult larvæ, or immature pupæ, were found as compressed yellow grubs, tapering at each extremity; and in two instances certain worm-like bodies, of a translucent piceous hue, exhibiting a somewhat segmental character, were protruding from the anal apex of these grubs, others of like nature being extracted singly from various cocoons whose inmates had quitted their domicile; the former being apparently the meconium which adult larvæ are accustomed to emit on the termination of the feeding stage.

The true males of *Scleroderma* were long undetermined, although Professor Westwood described two species, considered as such, in his monograph of this genus, published in the second volume of our Transactions (1837, p. 164), one of which he also figured (pl. xv., fig. 12); but in his 'Thesaurus' (1874) he completes the diagnosis of the genus from my specimens of a new species in the Hopeian Museum at Oxford, the veining of whose wings in the male corresponds with that of the winged female of *S. ephippium*. The two sexes of *S. cylindrica* were also figured by the late Mr. F. Smith from my specimens in the British Museum (B. M. Catal., part 3, 1855; Pl. iii. fig. 2 ♂, fig. 3 ♀), although the veining of the wings is very inadequately defined in the absence of an enlarged figure thereof.

The affinities of *Scleroderma* to the *Proctotrupidæ*, suggested in Prof. Westwood's aforesaid monograph, are supported by the ascertained economy of this species, as

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congregating to form their cocoons in a collective series; for, when treating of this family in his incomparable 'Introduction to the Modern Classification of Insects,' he mentions that "in a few instances which have fallen under my observation, the pupæ are enclosed in a cocoon"; and that a species figured by DeGeer was "reared from minute cocoons attached together side by side" (vol. ii., p. 170).

In some of the genera, moreover (*Ceraphron*, *Diapria*, *Gonatopus*, &c.), the females are in like manner apterous; and those which Nees von Esenbeck has comprised in his subfamily *Dryinei* are considered by this author to have their ovipositor "converted into a true sting" (*ibid.* 169, 172), as exemplified also in *Scleroderma*, whose oviduct accurately corresponds with Latreille's description of that of the *Proctotrupii* in his 'Genera &c.' (iv. 33), where he observes that this organ, "ex abdominis apice extimo prodiens, *his* retractilis, valvulis duabus tubum efficientibus, terebram proprie dictam et aciculam vaginantibus." Professor Westwood also remarks that in *Scleroderma* "the structure of the antennæ and ovipositor has not the appearance of those of a strictly aculeate Hymenopterous insect, as *Myrmecodes* or *Methoca*, whilst the generally small size of the *Sclerodermæ* is in favour of their relation with the *Proctotrupidæ*." (Monogr. p. 165).

Shuckard, in his Monograph of the '*Dorylidæ*' (Ann. & Mag. Nat. Hist. vol. v. 1840, p. 263, note), disputes the aforesaid affinity, referring this genus "to the solitary *Heterogyna*," there being, as he conceived, "every probability that what is usually considered as the *Myzine* of Latreille are the true males of *Scleroderma*"; while citing the circumstance of having received from me specimens of both these genera taken in Greece, as if tending to support such an hypothesis!

Latreille, in his 'Genera &c.', also places *Scleroderma* among his '*Mutillariæ*' as a section of *Methoca*, ♀, although the antennæ of the former are 13-jointed in both sexes, and those of the latter 12-jointed in the female.

Jurine, in figuring the female *Methoca* under the name of *Mutilla formicaria*, speaks of this as "un individu rémarquable, 1° parceque ce n'est pas une femelle de *Mutilla*, puisqu'il a sur la tête les trois petits yeux," &c. (Hym., vol. i., p. 266). He also observes, with reference to the presence or the absence of these ocelli in the

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respective sexes of *Mutilla*:—"Quel a été le but de la nature en établissant de tels disparates, et quelle en est l'utilité? Ce sont de ces problèmes que nous ne pouvons pas résoudre, à cause de notre ignorance sur l'histoire de ces insectes, mais qui méritent bien de fixer l'attention des naturalistes" (p. 265).

It would seem, however, from the evidence now afforded, that the exceptional acquisition of ocelli and wings in certain females of *Scleroderma*, normally destitute of both, can only be ascribed to peculiar alimentary advantages derived by such gifted individuals during their earlier stages, thus promoting the development of obsolete functional endowments by the superabundance of nerve-power available to this effect; whereas, under ordinary circumstances, the habitual superfluity of such adjuncts in the economy of the females has involved an hereditary tendency to their absorption and abortion, as in the well known instances of the eyes of cave-insects, the membranous wings of many Coleoptera, and other corresponding examples of morphotic divergencies in the ocelli and wings among the *Chalcididæ*, the neuters of ants, &c.

It is furthermore observable that, so far as hitherto exemplified, the presence of wings in either sex of *Scleroderma* invariably implies the co-existence of ocelli, though these are sometimes unaccompanied by the former, the primary exuberance of expansive energy being manifested in correlation with the latter.

Walker, in his 'Notes on *Chalcidiæ*,' adverts to the supposed analogy between *Scleroderma* and the *Agaonidæ*, "dwellers in figs" (p. 59), as suggested by Dr. Coquerel in the 'Revue de Zoologie' (ser. 2, vol. vii. p. 366); the fact, however, being that the *apterous* individuals of the latter, to which this analogy is ascribed, are *males* having winged partners, whereas the converse is the case in the former. According to Walker "*Scleroderma* has no near affinity with the *Bethylidæ*" (*Proctotrupidæ*, pars); but, as he conceived, "it has some resemblance to the female Australian and South American *Thynni*," and "seems to have more affinity with *Typhlopone*, the worker of *Labidus*, and with *Dichthadia glaberrima*,* the supposed female of *Dorylus*."

* This large, blind, apterous female has been recently obtained in South Africa from a nest of small eyeless ants (*Anomma*, Sm.), as related by Mr. Roland Trimen in our Proceedings (1880, pp. xxiv. and xxxiii.)



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In importing *Typhlopone* into this discussion, Walker loses sight of the analogy suggested by Dr. Coquerel (*loc. cit.* p. 425) as regards this "*blind ant*" described by Professor Westwood,* which Coquerel considers allied to his *eyeless Apocrypta* and *Sycocrypta*; while in the *latter* (and *not in Typhlopone*) he traces a partial resemblance to *Scleroderma* with *ample eyes*, his *Sycocrypta* having 3-jointed antennæ and *no palpi*, with *ventricose* basal segments to the abdomen, and being also of a different sex as aforesaid, both being equally irreconcilable with *Typhlopone* and *Dichthadia*.

When, however, among the repudiated *Proctotrupidæ*, already more or less corresponding with *Scleroderma* in structural details and economy, a large array of genera and species, including several with apterous females, coincides therewith in having 13-jointed antennæ in both sexes, as described by Professor Westwood, and figured in three elaborate folio plates of his 'Thesaurus' (xxix., xxx., and xxxi.), the natural affinities of this genus with the aforesaid group, thus constituting the subfamily *Epyrides*† proper, would seem to be incontestably established by these several connecting links.

I append a description of the species which has given rise to these remarks, together with that of two others taken by me in Epirus; and of a third in the British Museum, recently transmitted by the Rev. Thomas Blackburn from the Hawaiian Islands.

*Scleroderma ephippium*, n. s.

♀. *Caput* subquadratum, nigro-piceum, facie flavâ. *Mandibulæ* flavæ, apice nigrescentes, tridentatæ, dentibus duobus majusculis oblique positis, subacutis, tertio infra parvulo. *Oculi* compositi magni nigri. *Ocelli* obsoleti. *Antennæ* flavæ, capite dimidio longiores; scapo elongato recurvo, apice sensim largiore; articulo 2° breviore obconico; reliquis parvis, magnitudine paulatim crescentibus, longitudine latitudine coæqualibus, extimo

* Introd. Mod. Clas. &c., ii., pp. 218 note, 219, and 226, figs. 16, 17, 18, 19, 20, ♀, 1840; Ann. Nat. Hist., vi., pp. 81, 87, October, 1841, plate 2, fig. 1, and details; Shuckard, Ann. Nat. Hist., v., p. 262, June, 1840.

† The genus *Bethylus*, Latr. (*Omalus*, Jur.), has been restricted by Professor Westwood "to the flat-headed species which have the hind basal cell of the fore wings shorter than the front one, and which have 12-jointed antennæ" (*loc. cit.* p. 156).

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præcedente dimidio longiore, apice conico. *Thorax* flavus, plus minusve obfuscatus, mesonoto antice lateribusque fuscis. *Alæ* obsoletæ. *Pedes* graciles, femoribus tibiisque medio fuscis, basi apiceque pallidis, coxis tarsisque flavis. *Abdomen* nigro-piceum, nitidum, elongato-ovale; oviductus valvulis paullulum prodientibus, externe nigris, terebra acicularifórmi in iisdem retractili, longa, tenuissima, arcuata, flavescente, valida, munitum. Long. corp. $2\frac{3}{4}$—$3\frac{1}{2}$ mm.

Fœminæ alatæ unicæ, a sociis aliter haud distinguendæ, alarum diagnosis.

*Alæ* elongatæ, abdomine longiores, pellucidæ, flaccidæ, albescentes, nitidæ, ciliatæ, cellulis duabus basalibus venisque flavis instructæ: *alæ anticæ* costa tenuissima picea; vena postcostali apice lobo brevi crasso, stigma versus sed illud non attingente, antice projecto; stigmate parvo, subquadrato, insulato luteo; vena media basali satis conspicua, apice cum postcostali oblique conjuncta; vena transverso-media retro ante analem abrupte truncata, apice dilatata; vena anali basi incrassata, ultra transverso-mediam subtilissime producta: *alæ posticæ* venis duabus abbreviatis, basi robustis coalitis, munitæ. Long. corp. $3\frac{1}{2}$ mm. Exp. alar. antic. $3\frac{1}{2}$ mm.

*Hab.* In Epiro rubis exsiccatis intra Eumenidarum cellulas in quibus proles educatur; necnon in Corcyra ficus ramis siccis hibernans.

In Mus. Britann., Hopeiano Oxoniæ, et nostro.

*Scleroderma gracilis*, n. s.

♀. Luteo-fulva, nitida, capite elongato, disco bivittato; oculis parvis nigris vix compositis; antennis brevibus tenuibus, flavescentibus; thorace antice valde attenuato, postice capite paulum angustiore, dimidio longiore, femoribus luteo-flavis, tibiis tarsisque pallidioribus; abdomine capitis thoracisque longitudine coæquali. Ocelli alæque obsoleti. Long. corp. 3 mm.

♂. (An hujus speciei?) Alatus, ocellatus, rufo-fulvus, nitidus, capite fusco, tarsis pallidis, alis hyalinis, venis flavis basi infuscatis. *Caput* mediocre, subrotundatum, antice productum, ore flavo, oculis compositis magnis rotundis argentatis, ocellis tribus albidis. *Thorax* gibbus elongatus antice attenuatus, mesonoto capite paullum latiore, metanoto tenuiore. *Abdomen* thoracis dimidio vix longius, mesonoto parum latius, postice fuscescente. Long. corp. $2\frac{1}{2}$ mm. Exp. alar. antic. $4\frac{1}{2}$ mm.

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*Hab.* Montibus apud Zagori in Epiro, mense Augusto domi mas fœminaque semel lecti.

In Mus. nostro.

*Scleroderma concinna*, n. s.

♂. Alatus, ocellatus, omnino fulvo-flavus, nitidus; capite parvo, subrotundato, oculis magnis vix compositis nigris, ocellis hyalinis, antennis gracillimis, articulorum externe angulis anticis prominulis, macula elongata frontali inter antennas nigra; thorace valde elongato, capitis abdominisque latitudine coæquali, antice posticeque attenuato; alis fuliginosis venis flavis basi infuscatis; abdomine brevi, tenui, elongato-ovali, dimidio apicali paululum obscuriore. Long. corp. 2 mm. Exp. alar. antic. 3½ mm.

*Hab.* Prevesæ in Epiro, domi die 27 Julii, 1846, semel cepi.

In Mus. nostro.

*Scleroderma Polynesialis*, n. s.

♀. *Sclerodermæ piceæ*, Westw., affinis sed gracilior, antennis tarsisque brevioribus; picea, unicolor, punctulatissima, abdomine valde elongato, thoracis latitudine fere coæquali, segmentorum basalium quatuor margine postico luteo-flavo. Ocelli alæque obsoleti. Long. corp. 3¾ mm.

*Hab.* Haleakalæ, in insula Hawaiiana Maui dicta, ad altitudinem pedum 4000, inter folia sicca, a Dom. T. Blackburn lecta.

In Mus. Britannico.

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VIII. *Observations on the Hymenopterous genus* Scleroderma, *Klug, and some allied groups.* By J. O. Westwood, M.A., F.L.S., &c.

[Read March 2nd, 1881.]

The interesting memoir of Sir Sidney S. Saunders, making us clearly acquainted, for the first time, with the parasitic economy of the genus *Scleroderma*, together with a careful examination of the various microscopical preparations which that gentleman has made of the more important organs of both sexes, as exhibited in a new species of the genus, have enabled me to clear up some errors which had crept into my monograph of the genus read forty-five years ago, and published in the second volume of our 'Transactions.' It has also afforded me an opportunity of adding to our knowledge of the species, some of which are highly interesting in a physiological point of view; to the descriptions of which I have added the characters of some other allied insects, the morphological characters of which, on the confines of the Heterogynous *Aculeata*, and some of the most aberrant groups of the Entomophagous *Terebrantia*, render them especial objects of the attention of the systematic hymenopterist.

In the characters which I gave of the genus (Trans. Ent. Soc. ii., 164), an unfortunate typographical error occurs respecting the number of joints in the antennæ of the females, which are therein stated to be "10-articulatæ" instead of 13-articulatæ. This is the more unfortunate as the number of joints in the antennæ of the *Proctotrupidæ* constitutes one of the most important characters of the genera. In the figures however accompanying my monograph, these organs are correctly represented as 13-jointed (Plate XV., fig. 10 *a* and 11 *b*). A certain amount of modification must also be made in the description of the mandibles, as will be shown in a later paragraph of the present paper, where also a minute account of the structure of the oviduct and its appendages is given, and the venation of the wings illustrated.

The most important correction which requires to be made in my monograph has reference to the descriptions



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of the two insects which I had then but little doubt were the male *Sclerodermæ*; the antennæ of these insects were described as "12-articulatæ," and they are so represented in Plate XV., fig. 12 *a*. These two insects, described by me under the names of "*Scleroderma? fuscicornis*" and "*Scleroderma? fulvicornis*," are now ascertained not to be males of this genus; whilst the real males are now perfectly known, having been taken both by the late A. H. Haliday and Sir Sidney Saunders, the latter of whom communicated to me both sexes of a new species from Albania, which I figured in my 'Thesaurus Entomologicus,' Plate XXXI., fig. 13, male, fig. 14, female, where I gave a fresh generic synopsis in which the characters of the male are introduced. It is now evident that two at least of the small winged insects collected by Sir S. Saunders, referred to in the latter part of my monograph (p. 171), with 13-jointed antennæ, large ocelli, and without any radial branch to the upper wings (having only the basal cells of the genus *Epyris*), were male *Sclerodermæ*.

The antennæ of the male of *Scleroderma cylindrica* are represented in Plate IV., fig. 12, and those of *S. ephippium*, female, in Plate IV., fig. 6. They are 13-jointed in both sexes, those of the male being longer and more slender and filiform, and those of the female shorter, with the flagellum more clavate. The mandibles are elongate-conical, terminated by three sharp teeth, which are not quite on the same plane, and the back of the mandible has a deep groove which reaches nearly to the large terminal tooth. The mandibles of *S. ephippium* are represented in different points of view in Plate IV., figs. 1, 2, 3 and 4. The lower parts of the mouth are small and weak, the maxillæ being scarcely larger than the labium and its parts. The maxillary palpi are 5- and the labial palpi 3-jointed (Plate IV., fig. 5, from *S. ephippium*). The legs are of moderate length, the anterior tibiæ with a small curved acute spur on the inside of the extremity; the tarsi 5-jointed, the basal joint in the fore leg with a semicircular incision on the inside, which is brought into conjunction with the curved spur of the tibiæ (Pl. IV., fig. 7). The tarsi are terminated by a rather large pulvillus and two strong but slender claws (fig. 8). The ovipositor of the female of *S. ephippium* and its various parts are represented in Pl. IV., figs. 9, 10 and 17. These consist of the normal component

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parts, namely, the two outer sheaths (fig. 9 *a*, *a*, which appear to be coalesced along the greater portion of their length, and $a^* a^*$ the same more magnified), and the ovipositor proper composed of its two spiculæ (fig. *d d*), dilated, much curved at their bases (figs. 9 *b*, 10 *b*), which are capable of protrusion from the extremity of the tubular horny terebra (fig. *c*), but which are retained from being too much protruded, by the two muscular angulated dilatations (fig. *f f*.) In fig. 9 these organs are laterally compressed, the ovipositor being thrown out of its usual position, when its tip (fig. *d*) is generally seen at rest between the extremities of the two outer sheaths (fig. *a a*). In fig. 10 the parts of the ovipositor itself are vertically compressed, the recurved bases of the spiculæ (fig. *e*), with their muscular angulated lobe or catch (fig. *f f*), being represented as flattened. By strong protrusion of the spiculæ beyond the extremity of the terebra, the curved basal portions of the former are straightened, and brought forward to the base of the terebra, where their dilated angular form prevents them from further protrusion. The parts marked *e*, *e* in fig. 10 are the membranous plates connecting the base of the spiculæ and of the terebra itself with the interior of the abdomen. Fig. 17 represents the extremity of the abdomen of a female in which the spiculæ have been protruded unequally in dying.

The external organs of generation of the males of *Scleroderma* (Plate V., fig. 8, from *S. cylindrica*, male) are very complicated, and as they are generally more or less exserted, may be mistaken for those of the female without a careful examination. They consist of two acute but very slender chitinous central parts or blades, the extremities of which are very thin and incurved; and two broad composite lateral pieces each with a broad simple stipes and four terminal lobes, two of which are setose at the tips, and one at least more rigid than the other parts.

The wings of the males in this genus are fringed with fine hairs, and are almost destitute of veins, which are confined to the base of the anterior pair (Plate IV., fig. 11, basal portion of the wings of *S. ephippium*); they have a short subcostal vein, a shorter median or discoidal one united to the former at its extremity by an oblique vein, which is continued at an angle backwards into the disk of the wing; there is also a nearly obsolete subanal vein, of which the base is thickened, and there is an

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incrassated spot separated from the extremity of the subcostal vein by a very short clear space, which represents the stigma of the ordinary hymenopterous wing. In *S. vigilans* the extremity of the subcostal vein appears to be continuous with the stigmal spot (Plate V., fig. 3 *a*), and in *S. Wollastonii* (Plate V., fig. 2 *a*), the median or discoidal vein simply forms a closed cell with the subcostal, and does not emit a spur or branch backwards into the disk of the wing.

The legs in this genus are comparatively slender and simple, not exhibiting any of the strong series of spines found in the fossorial Hymenoptera.

Some of the species of this genus exhibit a remarkable instance of dimorphism and even trimorphism in the females, some of which are furnished with certain of the characteristics of the opposite sex. Sir S. S. Saunders, in addition to the ordinary female of *S. ephippium*, destitute of wings and of ocelli, found one agreeing in the general form of the body with the females, but possessing the fully-developed wings and ocelli of the male. Remembering the diversity in the size of the heads of different individuals among some of the species of ants, I was curious to ascertain how far this character was to be found in these different individuals. Their heads were therefore drawn of a large size by the camera lucida, which were then carefully reduced by measurement, when it appeared that the heads of the normal females were slightly longer than wide, whereas the head of the winged and ocellated female was considerably broader than long, although its length agreed very nearly with that of the normal female. Their relative proportions may be expressed by the following figures :—

| | LONG. | WIDE. |
|---|---|---|
| Head of normal female without wings or ocelli . . . . | 77 | 75 |
| Head of female with wings and ocelli | 78 | 90 |

These measurements may be contrasted with those of the normal male and female of *S. cylindrica* from Prevesa, drawn to the same scale :—

| | LONG. | WIDE. |
|---|---|---|
| That of the winged and ocellated male being . . . . | 61 | 60 |
| That of the wingless and unocellated female being . . . | 97 | 78 |

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The anomaly is carried still further in the Ceylonese *S. vigilans*, of which I have only seen two female specimens, one of which had fully-developed wings and ocelli (Pl. V., fig. 3), whilst the other was wingless, but possessed ocelli (Pl. V., fig. 4). But the anomalous characters of the genus are not confined to the females, since Sir S. S. Saunders captured a wingless male, provided with slender antennæ and with three large ocelli, but entirely destitute of wings. (Plate V., fig. 7).

The curious objects observed by Sir S. S. Saunders, extruding from the bodies of the insects on undergoing their transformations, and which at first sight appeared like some Entozoon or parasitic larva, were submitted by me to Mr. W. H. Jackson, M.A., F.L.S., one of the demonstrators in the physiological and comparative anatomical department of the Oxford Museum, who has made the Entozoa an especial object of study, and he has favoured me with the following memorandum, in conjunction with his fellow demonstrator, Mr. Algernon P. Thomas, B.A.:—

"The worm-like bodies submitted to us by Professor Westwood possess the following characters:—They are brownish in colour, translucent, and fairly smooth in the dried condition. Careful examination in a bright light showed traces of segmentation. In one of the specimens there are contained bubbles of air or some gas. We soaked one specimen in glycerine and water, and then examined it by reflected and by transmitted light, and by both combined. It showed no trace of internal organisation. There were few granules present, and it appeared to consist of irregular masses agglomerated together. We believe, consequently, that these worm-like bodies are not organisms at all, but more probably are excrementitious in their nature."

In addition to the species of *Scleroderma* enumerated in my monograph (Trans. Ent. Soc. ii.), the following have to be added to the genus:—

*Scleroderma bicolor.* (Plate V., fig. 1).

Smith, Journ. Proc. Linn. Soc., vol. v., p. 77.

"S. capite thoraceque rufo-testaceis, abdomine nigro nitido.

"♀. The head oblong, rufo-piceous, smooth and shining, the antennæ and legs pale rufo-testaceous. Thorax



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pale ferruginous, with the metathorax flavo-testaceous. Abdomen smooth, shining black. Length 1½ line."

*Hab.* Makassar. In Mus. Hopeiano Oxoniæ (*olim Saunders*). (*Wallace*, No. 35).

Plate V., fig. 1, female magnified. 1 *a*, the mandible; 1 *b*, maxilla, with 5-jointed palpus; 1 *c*, labium and 3-jointed labial palpi; 1 *d*, antenna, 13-jointed, 2nd joint much larger than the 3rd and several succeeding joints; 1 *e*, fore tibia and basal joints of tarsus.

*Scleroderma ruficornis.*

Lucas, Ins. Algerie, p. 322. Plate XV., fig. 8.

*Hab.* Oran; under stones.

The hind legs seem to be incorrectly delineated.

*Scleroderma Sidneyana.*

Westw. Thes. Ent., p. 170, Plate XXXI., fig. 13, male; fig. 14, female.

*Hab.* Albania. In Mus. Hopeiano Oxoniæ (*olim nostr.*, Dom. *S. Sidney Saunders* amicé communicata).

*Scleroderma ephippium.* (Plate IV., figs. 1—11.)

S. S. Saunders, *ante* p. 114.

*Hab.* Epirus.

*Scleroderma gracilis.*

S. S. Saunders, *ante* p. 115.

*Hab.* Zagori, Epirus.

*Scleroderma concinna.*

S. S. Saunders, *ante* p. 116.

*Hab.* Prevesa, Epirus.

*Scleroderma Polynesialis.*

S. S. Saunders, *ante* p. 116.

*Hab.* Haleakala, Hawaii.

*Scleroderma Wollastonii*, n. s. (Plate V., fig. 2).

♂. Piceo-niger, nitidus, angustus, abdomine elongato fere cylindrico; antennis tarsisque magis piceis; alis

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pallide fuscescentibus, vena mediana parva, apice antice curvata et cum subcostali conjuncta, postice absque ramo ordinario deflexo.

♀. Elongata gracilis, glaberrima, capite thorace latiore, piceo, subquadrato, angulis rotundatis, thorace lutescenti, postice obscuriori; abdomine nigro; antennis piceis, articulis basalibus fulvis; pedibus piceis, tarsis pallidioribus. Long. corp. maris fere 3 mm. Exp. alar. ant. fere 5 mm. Long. corp. fœminæ, circiter 3 mm.

*Hab.* In insula Stæ. Helenæ (D. *T. Vernon Wollaston*). Mas et fem. in Mus. Hopeiano Oxoniæ (*olim nostr.*).

*Scleroderma vigilans*, n. s. (Plate V., figs. 3, 4).

♀. Picea glabra, antennis tarsisque luteo-albidis; collare trigono rufo-piceo; alis pallide fuscescenti tinctis; capite subquadrato; abdomine elongato, apice attenuato; alarum anticarum vena subcostali brevi cum stigmate ovali subdiscoidali fere connexa, vena mediana apice deflexo, ramum in discum alæ extensum formante. Long. corp. $2\frac{2}{3}$ mm. Exp. alar ant. 4 mm.

*Obs.* 1. Individua duo fœminea ocellis distinctis instructa. (Plate V., fig. 4).

*Obs.* 2. Individuum unum fœmineum alis perfectis ocellisque instructum. (Plate V., fig. 3).

*Hab.* In insula Taprobanæ (D. *Thwaites*). In Mus. Hopeiano Oxoniæ (*olim nostr.*).

*Scleroderma Thwaitesiana*, n. s.

♀. *S. vigilanti* fœminæ normalis (Pl. V., fig. 4) forma congruit at multo minor, gracilis, nitida; obscure lutescens capite magis castaneo; abdomine thorace latiori segmentis in medio obscurius transverse fasciatis, nigritudine in segmento apicali magis distincta; antennis pedibusque corpore concoloribus, femoribus latis. Long. corp. circiter 3 mm.

*Hab.* In insula Taprobanæ (D. *Thwaites*). In Mus. Hopeiano Oxoniæ (*olim nostr.*)

*Scleroderma soror*, n. s. (Plate V., fig. 5.)

♀. Parva, tota pallide lutea, antennis capite vix longioribus fulvis, articulis apicalibus sensim incrassatis, nigricantibus; capite oblongo, oculis nigris; thorace

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capite parum angustiori, mesonoto utrinque dilatato, abdomine elongato, thorace latiore subdepresso segmentis duobus basalibus utrinque macula parva nigra notatis; pedibus brevibus, crassis; tarsis posticis tibiis dimidio longioribus. Long. corp. circiter 2 mm.

*Hab.* Mexico (D. *Coffin*). In Mus. Hopeiano Oxoniæ (*olim nostr.*)

*Scleroderma Fonscolombei*, n. s. (Plate V., fig. 6).

♂. Glaberrimus, castaneus, metanoto et basi abdominis magis rufescentibus, antennis tarsisque clarioribus, alis hyalinis, anticarum basi parum lutescentibus, venis luteis; abdomine brevi ovali; antennis filiformibus. Long. corp. 2½ mm. Exp. alar ant. 4 mm.

*Hab.* Aix (Provence). M. Boyer de Fonscolombe mecum communicavit. In Mus. Hopeiano Oxoniæ (*olim nostr.*)

*Scleroderma linearis*, n. s. (Plate V., fig. 7).

♂. Apterus oculis compositis ocellisque instructus; piceo-fulvus nitidus gracilis; capite parum longiori quam latiori, magis piceo; thorace angusto, mesonoto haud lateraliter dilatato; abdomine obovali subconvexo, thorace latiori, apice obscuro; pedibus fulvis gracilibus; antennis gracilibus fere filiformibus piceis basi parum rufescentibus in clypeum angulariter productum insidentibus. Organa externa generationis in individuo aptero delineato cum illis Sclerodermæ marium congruunt. Long. corp. 2½ mm.

*Hab.* Prevesa in Albania, (D. *S. S. Saunders*), 3 September (No. 632). In Mus. Hopeiano Oxoniæ (*olim nostr.*).

*Obs.* Species memorabilis defectu alarum in mare distinguenda.

Sir S. S. Saunders, in his MS. notes on his No. 632, states that "the female of this species [since lost] when taken throws out a pungent fetid odour." It was taken "in the house, September 25, 1849, stinging his neck." The specimen here described is certainly a male insect.

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The following species, which have been described as belonging to *Scleroderma*, must be removed from the genus:—

*Scleroderma contracta.*

Westw., Trans. Ent. Soc., ii, 169. Plate XV., fig. 11.

*Hab.* Carolina. In Mus. Berlin.

This female insect is nearly a third of an inch long, its large size dissociating it from the legitimate *Sclerodermæ*, its general form, especially of the thorax, and its tridentate mandibles (*op. cit.*, Pl. XV., f. 11 *a*), removing it to the *Epyrides*, especially near *Pristocera depressa*. (See Plate VII., fig. 6.) Possibly the female of *Pristocera atra*, Klug.

*Scleroderma modesta.*

Smith, Journ. Proc. Linn. Soc., vol. vii., p. 27.

*Hab.* Mysol, New Guinea.

Belongs to the new genus *Apenesia*. (See below.)

*Scleroderma fuscicornis* and *S. fulvicornis.*

Westw. Mon., *supra cit.*, p. 172. (See below.)

*Scleroderma Mutilloides.*

A. Costa, Ann. Mus. Zool. Napoli, ii., Pl. I., f. 3.

= *Mesitius Ghiliani*, Spinola, Mem. Accad. Torino ii., t. 13, 1851.

The genera *Isobrachium*, Foerster, Hym. Stud. ii., 96 (1857), and *Heterocœlia*, Dahlbom, Hym. Europ. ii., Chrysid., p. 21 (1854), are synonymous with *Mesitius*. Conf. *I. maculipenne*, Marshall, E. M. M. x., p. 222, and, also Westw. Thes. Ent., p. 167.

CEPHALONOMIA.

Westw., Mag. Nat. Hist., vol. vi., p. 419 (September, 1833), and Introd. Mod. Class. Ins., Gen. Synops., p. 75 (1840).

*Holopëdina*, Foerster in Verhandl. naturhist. Ver. Preuss. Rheinl., 7 Jahrg. (1850), p. 502.

"Caput maris mediocre, fere rotundatum, fœm. magnum oblongo-quadratum planum; antennæ in utroque sexu

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10 [12-*] articulatæ, articulo 2do 3tio multo majori, maris filiformes longitudine fere thoracis, fœm. capite non longiores fere moniliformes, haud apicem versus incrassatæ; collare triangulare, antice rotundatum; alæ nervo subcostale brevi (tertiam partem longitudinis alarum non attengenti) callositate parva ad costam terminata, alteraque† subapicali discum versus posita; nervo stigmaticali nullo (fig. 55*f*); fœm. interdum aptera."

"Antennæ 10- [12-] jointed in both sexes, with the 2nd joint longer than the 3rd, in the male filiform, and nearly as long as the thorax; in the female submoniliform and not longer than the head, which is oblong-quadrate and flattened; thorax elongate-ovate; collar large and triangular, rounded in front; wings with a very short subcostal nerve terminated by two minute callous spots; female sometimes apterous (fig. *d*)."

*Cephalonomia formiciformis.*

(Plate VI., fig. 1, male; fig. 2, winged female; fig. 3, apterous female.)

*Omalus Polypori*, Foerster MS. in Mus. Hopeiano.

*Holopëdina Polypori*, Foerster, *op. cit. supr.*, p. 502, etiam in Mus. Hopeiano, ambobus cel. Foesterio ipso transmissis.

"Nigra nitida, pedibus antennisque piceis, his in fœm. articulis 2do et 3tio pallidis; variat fœm. corpore piceo; pedibus, præsertim tibiis et tarsis pallidioribus. Long. corp. $\frac{1}{2}$—$\frac{2}{3}$ lin. Exp. alar. 1 lin. In Mus. nostro.

"*Hab.* In fungis (pileatis) prope Londinum.

"Fig. 6, the insect much magnified; *e* shows the natural length of the insect."

The above description was published by me in 1833, the specimens of this minute insect, which constitutes the type of the genus, having been originally found by myself in a Fungus growing in the neighbourhood of London. Amongst these specimens were winged males, and winged and wingless females. Herr Foerster, of Aix-la-Chapelle,

* By a typographical error the number of joints in the antennæ was given as 10 in both sexes; but in the figure of the insect (*d*) they were correctly represented as 12-jointed. The error was corrected in my Introduction, Gen. Synopsis, p. 75.

† This second callous spot is placed just below the apex of the subcostal vein.

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subsequently described the insect, raising it into a separate genus, *Holopëdina*. He also had found the winged males and both conditions of the females. He states:—"Ich habe diese Art aus einem Polyporus der an einem noch lebenden Eichen stamm sass, erzogen; und zwar in beiden Geschlechtern, die ♂ waren viel seltner als die ♀ und unter den letztern die geflügelten Individuen häufiger als die ungeflugelten." Both H. Foerster and myself failed to notice any connection of these little insects with any other resident of the Fungus on which they might be parasites.

I subsequently obtained specimens of both sexes from the late Mr. Raddon, who had found them in Indian corn received from Africa.

The male insect is represented in Plate VI., fig. 1, the winged female in fig. 2 and the wingless female in fig. 3, the antenna of the female in fig. 2 *a*, and the base of the fore wings in both sexes in fig. 2 *b*. In the wingless female represented in the woodcut accompanying my original description the base of the abdomen had been compressed, distorting the basal segment and giving it the appearance of a peduncular scale like that of an ant, whence the specific name which I applied to the species. Fig. 4 *a* represents the head of the male of the Indian corn specimens, and 4 *b* the base of the fore wings of the same.

*Cephalonomia? peregrina*, n. s. (Pl. VI., fig. 5, ♂; fig 6, ♀.)

♂. Omnino pallide fulvus, oculis nigris, clypeo porrecto acuto bifido, mandibulis apice acuto curvato, intus denticulis tribus minutis armatis; alis setigeris vena postcostali brevi, stigmate ovali; antennis subfiliformibus.

♀. Pallide picea, antennis pedibusque lutescentibus, illis brevibus subclavatis; oculis magnis rotundis lateralibus, ocellisque instructa; abdominis apice subinflexo; alis anticis stigmate oblongo-ovali, margine pone stigma incrassatione minuta instructo. Long. corp. 1½ mm.

*Hab.* In insula Taprobanæ (D. *Staniforth Green*). In Mus. nostro.

I am indebted to Mr. Staniforth Green, of Colombo, Ceylon, for the two very minute insects described above too concisely, being prevented from giving a fuller description in consequence of the specimens being mounted in Canada balsam as microscopical slides.

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The wings, unfortunately, do not lie in a convenient position for a clearer view of the stigma than I have given in the accompanying figures.

*Cephalonomia? fuscicornis.*

*Scleroderma? fuscicornis*, Westw. Trans. Ent. Soc. ii., p. 172, Pl. XV., fig. 12.

*Holopëdina fuscicornis*, Foerster in Verh. naturhist. Ver. Preuss. Rheinl., 7 Jahrg., 1850, p. 151.

Herr Foerster, having described his genus *Holopëdina* founded on my *Cephalonomia formiciformis*, suggested that the two insects which I had doubtingly described in my monograph as the males of *Scleroderma*, were to be referred to his new genus. It is, however, with some hesitation that I accept this suggestion, as the veins of the wings scarcely agree with those of that genus, possessing a rudimental median vein, more or less distinct, emitting a deflexed branch, although but ill-defined, at its posterior extremity, and wanting the distinct callous spot at the extremity of the postcostal vein. The antennæ are 12-jointed and slender.

This species seems rather widely distributed and to be domestic in its habits, as I took a specimen of the male in the Ambrosian library at Milan in September, 1862, crawling over a vellum MS. of Homer of the 4th century, from which I was at the time copying one of the illuminations. I took another male, crawling very slowly, in the Museum of M. Signoret, in Paris.

I also received from M. Boyer de Fonscolombe a much more minute male specimen than the type figured in Trans. Ent. Soc., vol. ii. Its body is entirely fulvous and glossy, but it is in a very dilapidated condition. The fore wings, however, have the postcostal vein dilated at its extremity, which is united with an oval callosity near the costa, and the median vein is distinct and forked at its extremity, the anterior part of the fork united with the postcostal (forming a long closed cell) and its posterior part forming a deflexed branch into the disc of the wing almost as in *Scleroderma*.

Sir Sidney S. Saunders also took another male at Prevesa, in Albania, on the 27th June, 1842, which I have represented in Plate VI., fig. 7, with its details.

It is rather smaller and more delicately formed than the type of the species, but it so closely resembles it that

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I do not feel sufficiently convinced of its specific distinction. The median vein is indistinct, but it throws out a deflexed, although indistinct branch at its extremity into the disc of the wing, as in *Scleroderma*. The antennæ are very slender.

Plate VI., fig. 7, represents the specimen with its details, which differ considerably from those of *Scleroderma*, the mandibles (fig. 7 *a*) having a sharp terminal tooth and three obtuse ones below the apex; the maxillæ (fig. 7 *b*) have two large apical lobes and very short 4-jointed maxillary palpi, and the labium (fig. 7 *c*) subovate with very minute 2-jointed labial palpi.

The discovery of the legitimate females of this species will probably render its removal from the genus *Cephalonomia* necessary.

*Cephalonomia? fulvicornis.*

*Scleroderma? fulvicornis*, Westw. Trans. Ent. Soc. ii., p. 172.

This insect, of which the only known specimen is contained in the Berlin Museum, is a male so entirely resembling *C. fuscicornis*, that the same observations on its general position will be also applicable.

*Cephalonomia? cursor*, n. s. (Plate VI., fig. 8, &c.)

♂. Minutus, apterus, oculis ocellisque instructus, piceo-luteus, nitidus, capite et abdomine subcastaneis, capite thorace latiori, paullo longiori quam latiori, angulis posticis rotundatis, supra convexo; antennis capite longioribus, gracilibus, articulo 2ndo magno 3tio ad 12um (apicalem) sensim longioribus et parum crassioribus; abdomine ovali, convexo, thorace latiori et vix longiori; pedibus gracilibus luteis, tarsis elongatis, calcari tibiarum anticarum, articuloque basali tarsorum intus ciliatis; unguibus tarsorum acutis, basi dilatatis. Long. corp. $\frac{2}{3}$—1 lin.

*Hab.* Prevesa in Albania (D. *S. S. Saunders*), mens Jun. Septembr. et Octobr. capta. In Mus. Saunders et Hopeiano Oxoniæ.

The slender antennæ of this insect, with its agile form, induced me to regard it as a male, which supposition has been confirmed by the dissection of one of Sir S. S. Saunders's specimens, kindly submitted to me



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for that purpose, which enables me to state that the external organs of generation agree with those of the typical males of *Scleroderma*. Here then we have another species with apterous males provided with ocelli and large lateral eyes, just as in the case of *Scleroderma linearis*.

One of the maxillæ of this male is represented in Plate VI., fig. 8 *b*. It agrees with Plate VI., fig. 7 *b*, from the winged specimen of the male from Prevesa above described, and figured in Plate VI., fig. 7, except that the maxillary palpi are clearly 5-jointed, as shown quite satisfactorily in both maxillæ on careful dissection. I have little doubt that when the female of this species is discovered it will be found necessary to separate it generically from *Cephalonomia*.

### Apenesia.

Westw. Thes. Ent., p. 170.

The species of this genus, of which only females have been hitherto observed, might easily be mistaken for species of *Mutillidæ*, but the 13-jointed antennæ of these insects separate them from all the Aculeated Hymenoptera, and prove their relationship with *Scleroderma* and its allies. In addition to the characters of the genus laid down in my 'Thesaurus,' the peculiar structure of the legs is to be noticed; they are short and robust, the anterior leg is not strongly spined, but the tibiæ are terminated by two spurs, and the basal joint of the tarsus is lunate and armed on the under side with a row of very fine short bristles (Plate VII., fig. 3 *b*); the middle legs, on the contrary, are very robust, the tibiæ strongly serrated on the outer margin, and the spurs finely spined; in the middle leg the tarsi are longer than the tibiæ, and have the under-side of the three basal joints finely spined (fig. 3 *c*.) The structure of the middle legs leads us to infer the fossorial habits of the insects, although the anterior and hind tibiæ are comparatively simple (fig. 3 *d*.)

The type of the genus is from the Amazons, but I possess a species from Nicaragua (Chontales), and the two insects described by Mr. F. Smith as *Sclerodermæ* (*S. modesta* from Mysol, New Guinea, and *S. parasitica* from Salwatty) belong to the genus.

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*Apenesia Amazonica.*

Westw. Thes. Ent., p. 171, Plate XXXI., f. 12.

*Hab.* Amazonia (*Bates*). In Mus. Hopeiano Oxoniæ.

*Apenesia Chontalica*, n. s. (Plate VII., fig. 3, &c.)

♀. Tota fulva, nitida, pedibus pallidioribus, capite magno subquadrato, angulis posticis rotundatis, mandibulis (fig. 3 *a*), paullo curvatis apice bidentatis; antennis brevibus 13-articulatis, versus apicem vix crassioribus; abdomine magno convexo, ovato, apice acuto; pedibus brevibus crassis, tibiis anticis subsimplicibus, apice bicalcaratis, tibiis intermediis fortiter serratis, posticis subsimplicibus; tarsis biposticis articulis tribus basalibus subtus serrulatis; unguibus omnibus elongatis. Long. corp. 2⅓ lin.

*Hab.* Chontales, Nicaragua. In Mus. Hopeiano Oxoniæ.

*Apenesia modesta.* (Plate VII., fig. 4, &c.)

*Scleroderma modesta*, Smith, Journ. Proc. Linn. Soc., vol. vii., p. 27.

*Apenesia modesta*, Westw. Thes. Ent., p. 171.

"S. capite, thorace, pedibusque pallide testaceis; abdomine rufo-piceo, cingulato.

"♀. Length 2 lines. The head, antennæ, thorax, and legs pale honey-yellow, the tips of the mandibles ferruginous; the suture of the thorax and the articulations of the legs with ferruginous stains; the exterior margin of the intermediate tibiæ serrated; the basal margins of the segments of the abdomen broadly rufo-piceous, the abdomen elongate and lanceolate."

*Hab.* Mysol, New Guinea (*Wallace*). In Mus. Hopeiano Oxoniæ (*olim Saunders*).

The head below has a rather deep central longitudinal impression, the mandibles are obscurely dentate at the tips (fig. 4 *a*); the maxillæ have a lobe on the outside, the maxillary palpi being 4-jointed, the first and second joints dilated (fig. 4 *b*); the labium is oblong, with the labial palpi 3-jointed; the parts of the mouth thus agreeing with those of *A. Amazonica*.

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*Apenesia parasitica.*

*Scleroderma parasitica*, Smith, Journ. Proc. Linn. Soc., vol. viii., p. 79.

"S. rufo-picea lævis, nitida; abdomine cingulato.

"♀. Length 2 lines. Rufo-piceous, smooth and shining; the anterior parts of the head, the antennæ, and legs rufo-testaceous; the posterior margins of the segments of the abdomen dark rufo-piceous."

*Hab.* Salwatty (*Wallace*). In Mus. Hopeiano Oxoniæ (*olim Saunders*).

This species is smaller than *A. Chontalica*, being nearer to *A. modesta*; its abdomen, however, is not so elongate as in that species, and its dark pitchy colour distinguishes it from any of the other species.

PRISTOCERA.

Klug, Weber, and Mohr, Beitr. z. Naturk. ii., p. 202.

It is to this genus that the insect described in my monograph on *Scleroderma* under the name of *S. contracta* (Trans. Ent. Soc. ii., p. 169), from Carolina, should be referred. The type of the genus (*Bethylus depressus*, Fabr., Syst. Piez., p. 237) is a native of Middle and South Europe, the female of which was first described and figured in my 'Thesaurus Entomologicus,' Plate XXX., fig. 4. The figure is here reproduced (Plate VII., fig. 6), for comparison with the other insects immediately allied to it, represented in my figures now published. A specimen of the male in the Hopeian collection was taken by Mr. Hope in the Archdeacon's Close at Netley. The female was figured from a specimen communicated by Signor Costa of Naples. The antennæ of the female are short and 13-jointed (fig. 6 *a*); the maxillary palpi (fig. 6 *b*) are 6-jointed; and the labial palpi (fig. 6 *c*) are 3-jointed).

*Pristocera contracta.*

*Scleroderma contracta*, Westw., *op. cit. supra.*

I have but little doubt, from the general resemblance of this insect from Carolina to the female of *P. depressa*, that it is the female of *Pristocera atra*, Klug, from Georgia, in North America.

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THYNNUS.

Fabr., Syst. Ent., p. 360.

*Thynnus picinus*, n. s. (Plate VII., fig. 5).

♀. Aptera, elongata, convexa, glabra, picea, antennis, pedibus, marginibusque posticis segmentorum abdominalium magis testaceis; capite quadrato convexo, rude punctato; antennis (fig. 5 *a*) brevibus crassis, 12-articulatis, articulo 2ndo minimo; pronoto subquadrato punctato, angulis anticis rotundatis, metanoto angustiore supra plano, lateribus ad basin elevatis, disco ibi depresso punctato, abdomine elongato punctato, marginibus segmentorum lævioribus, segmento ultimo supra subcarinato, et utrinque linea obliqua setarum brevium lutearum instructo, oviductu acutissimo brevi, e lobis duobus brevibus obtusis exeunte; pedibus brevibus robustis; tibiis extus spinosis (fig. 5 *b*, hind leg). Long. corp. 4 lin.

*Hab.* In Brasilia (D. *Miers*). In Mus. Hopeiano Oxoniæ.

This insect has so much the general appearance of the females of *Pristocera depressa* and *P. atra*, above noticed, that I considered it to be congeneric therewith; the 12-jointed antennæ of the female and the structure of the legs remove it, however, to the *Aculeata*, and to the family *Thynnidæ*. I cannot, however, suggest the genus or subgenus of that family to which it belongs.

METHOCA.

Latr., H. N., xiii. 268. = *Tengyra*, Latr., males.

*Methoca ichneumonoides.*

Latr.; Curtis, Brit. Ent., Pl. 329.

*M. articulata*, Latr. olim in Journ. d'Hist. Nat. et Phys.
*Mutilla formicaria*, Jurine, Pl. XIII.
*Tengyra Sanvitali*, Latr., fig. Westw., Ent. Text Book, Pl. III., fig. 5.

*Methoca californica*, n. s. (Plate VII., fig. 1.)

♀. Tota badio-castanea, nitidissima, glaberrima, convexa, capite thorace latiori subgloboso, antennis rectis, thorace vix longitudine æqualibus, fere filiformibus, articulis ultimis nigricantibus; collare ovali basi truncato;

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mesonoto angusto bipartito, metanoto fere globoso; abdomine gibboso segmentis 2 et sequentibus in medio nubila nigra notatis; aculeo longo gracillimo porrecto e lobis duobus parvis angustis exeunte; pedibus elongatis subinermibus. Long. corp. 4 lin.

*Hab.* California. In Mus. Hopeiano Oxoniæ (*olim W. W. Saunders*).

*Methoca hæmorrhoidalis*, n. s. (Plate VII., fig. 2.)

Speciebus reliquis hujus generis major.

♀. Nigra, capite et thorace velutinis, striolis minimis approximatis punctisque interjectis notata, abdomine dimidio basali nigro nitido, segmentis 4to et 5to basi griseo sericantibus, reliquis castaneis, aculeo longo exserto castaneo e lobis duobus planis minutis castaneis exeunte; capite lato oculis magnis ad angulos anticos positis; ocellis minutis inter oculos locatis; pronoto antice rotundato mesonoto bipartito; metanoto obovato convexa; antennis longis convolutis, nigris, pedibus longis, gracilibus, tarsis præsertim elongatis. Long. corp. 8 lin. (abdom. 4 lin.)

*Hab.* Caffraria (*D. Weale*). In Mus. Hopeiano Oxoniæ.

*Obs.* The descriptions of the other species of this interesting genus are so scattered in many works often very inaccessible, that I have thought it advisable to reproduce them in the following pages:—

*Methoca Canadensis.*

Smith, Brit. Mus. Cat. Hym. iii., p. 67.

♂. Black and shining, slightly villose, the face closely punctured, the vertex sparingly so; the anterior margin of the clypeus produced into an elevated tubercle; the tips of the mandibles ferruginous. Thorax coarsely punctured; the metathorax coarsely rugose, having above a central channel which is transversely ridged; behind truncate, the truncation obliquely rugose-striate on each side, having a slight central channel; the legs have the apical joints of the tarsi obscurely rufo-piceous, the calcaria ferruginous; wings hyaline, faintly coloured. Abdomen: the basal half of the first segment rugose, the lateral margins elevated and acute beyond this; the entire abdomen is rather finely and

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distinctly punctured, the base of the segments depressed, their margins constricted. Length 4½ lines.

*Hab.* Canada. (Coll. *F. Smith*, olim).

*Methoca insularis.*

Smith, Journ. Proc. Linn. Soc., vol. v., p. 77.

M. nigra; antennis, mandibulis, pedibusque ferrugineis; abdomine rufo-piceo cingulato.

♀. Length 3 lines. Black, smooth, and shining; the antennæ, anterior margin of the clypeus, the mandibles and palpi ferruginous; a deeply impressed line runs from the base of the clypeus up to the anterior ocellus. Thorax: a deep constriction between the pro-, meso-, and metathorax, the apex of the latter rufo-piceous. Abdomen with a short petiole, the apical margin of the first and second segments and the apical segment entirely rufo-piceous.

*Hab.* Makassar (*Wallace*). In Mus. Hopeiano Oxoniæ.

The abdomen of this species is more oval and shorter than that of *M. thoracica*; the body is black, with the tip of abdomen luteous; legs and antennæ castaneous, the latter thicker in proportion than in *M. thoracica*.

*Methoca thoracica.*

Smith, Journ. Proc. Linn. Soc., vol. vi., p. 50.

"M. rufo-ferrugineus, capite abdominisque fasciis tribus nigris."

♀. Length 4 lines. Rufo-ferruginous; the head black, the abdomen with three black fasciæ, very smooth and shining; the mandibles, clypeus, and antennæ ferruginous. (Plate I., fig. 5, female.)

*Hab.* Celebes (Tondano), (*Wallace*). In Mus. Hopeiano Oxoniæ (*olim W. W. Saunders*).

"This very beautiful insect may probably be a very large highly-coloured form of *M. insularis*, described in a previous paper; but not having any intermediate in size, I have thought it advisable to describe it as a distinct species."

The type of this insect is a female, and is now contained in the Hopeian Museum. It resembles *M.*

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*ichneumonoides*, with the head black. General colour chestnut-sienna, abdomen with peduncle and three fasciæ black.

*Methoca gracilis.*

Smith, Journ. Proc. Linn. Soc., vol. v., p. 77.

"M. nigra, nitida, immaculata, alis hyalinis.

"♂. Length 3¾ lines. Shining black, slightly villose, the head closely and finely punctured, sparingly so on the vertex, the tips of the mandibles ferruginous. The prothorax smooth, the mesothorax punctured, and the metathorax coarsely rugose; the wings hyaline and splendidly iridescent; the legs rufo-piceous. Abdomen smooth and shining; the basal segment subpetiolate, with a central longitudinal channel; the base of the segments much depressed; their margins constricted; the apical one with an acute upturned spine."

*Hab.* Makassar (*Wallace*).

In Mus. Hopeiano Oxoniæ (*olim Saunders*).

Male smaller than our *M. Sanritali*, entirely black. Probably male of *M. insularis*.

*Methoca nigriceps.*

Smith, Descr. n. sp. Hymenopt., 1879, p. 228.

"♀. Ferruginous, with the head and four fasciæ on the abdomen, black. The clypeus, mandibles, and antennæ ferruginous; the head smooth and shining, with fine distinct punctures. The thorax smooth and shining, the tibiæ and tarsi finely spinose. Abdomen very smooth and shining, the 2nd and 3rd segments with a broad black fascia near to their apical margins; the fasciæ are broadest in the middle and taper to a point laterally, but do not extend to the lateral margins; the fasciæ on the 3rd and 4th segments are at their basal margins. Length 4 lines."

*Hab.* Brazil (? locality uncertain). In Mus. Britann.

*Methoca constricta.*

Smith, *op. cit.*, p. 228.

"♂. Black; the abdomen shining, the segments deeply constricted. The antennæ obscurely fulvous beneath, above fuscous; the mandibles ferruginous; the face closely punctured, the vertex shining and less

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closely so. The prothorax closely punctured, the mesothorax and scutellum more strongly so; the metathorax coarsely punctured. Wings hyaline and iridescent, the nervures and stigma rufo-testaceous; legs dark rufo-piceous, with the articulations and the tarsi, as well as the anterior tibiæ, rufo-testaceous. The margins of the segments of the abdomen with a thin hoary pile; beneath there is an impressed longitudinal line in the middle of each segment. Length 3½ lines."

*Hab.* Ega. In Mus. Britann.

*Methoca Poeyi.*

Guérin-Mén., Voy. de la Coquille, p. 209. Iconogr. du Règne An., 3, 430. Ramon de la Sagra, Ins. Cuba, pl. 18, fig. 8. Cresson, Proc. Ent. Soc. Philad., iv., p. 113.

"Le male est noir, sans taches, avec quelques poils blanchâtres, le metathorax est un peu rugueux en arrière, les ailes sont incolores, à nervures noires et les deux nervures transversales qui forment la seconde cellule cubitale, ne sont pas paralleles comme dans la M. Sanvitali. L'abdomen est lisse, à segments un peu étranglés avec le dernier terminé par une épine courbée en haut. Long. 8 mm."

"La femelle est rouge avec l'abdomen noir à l'exception cependant du premier segment qui est egalement rouge. Long. 5¼ mm."

*Hab.* Cuba, *M. Poey* (un couple piqué á la même épingle). In Coll. Guérin-Méneville olim.

*Methoca bicolor.*

Say, Boston Journal of Nat. Hist., i., p. 292.

Le Conte, Writings of Say, ii., p. 741.

"♀. Rufous; head and part of the tergum black.

Inhabits Indiana.

Body pale yellowish rufous; polished; head black; antennæ rufous, terminal joints piceous; mandibles and palpi rufous; thorax, segments subequal, anterior and posterior ones convex subovate, intermediate one with two slightly elevated convexities; abdomen ovate subfusiform; tergum with a transverse triangular black spot at the tip of the second segment, another on the third, the remaining ones confluent. Length one-fourth



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of an inch. The abdomen does not contract abruptly at the petiole, but subsides gradually. Van der Linden says that the species of this genus are the females of species of *Tengyra* (Ann. d. Sc. Nat., Jan., 1829, p. 48)."

*Methoca* (*Tengyra*) *stygia*.

Say, Boston Journal of Nat. Hist., i., p. 299.

Le Conte, Writings of Say, ii., p. 741.

"Black, mandibles piceous at tip.

Inhabits Indiana.

Body entirely black, immaculate, punctured; mandibles piceous at tip, near the tip one-toothed; wings hyaline, nervures black, separating nervure of the first and second cubital cellules wanting; stigma obvious, black; abdomen, segments contracted near the incisures; oviduct not extending beyond the terminal processes and concealed beneath them. Length two-fifths of an inch.

Resembles *T. Sanvitali*, Latr., but is larger, with a much larger stigma, and each abdominal segment is much more contracted before its posterior incisure."

*Methoca pacalis*.

Harris, Catal. Ins. Massach., in Hitchcock's Survey, 2nd edit. (*absque desc.*)

*Hab.* Massachusetts.

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## Explanation of the Plates.

### PLATE IV.

Figs. 1, 2, 3, 4. Mandibles of *Scleroderma ephippium* in different positions.

5. Maxillæ and labium of ditto.
6. Antenna of female of ditto.
7. Fore leg of ditto.
8. Last joints of tarsus.
9. Ovipositor of female laterally compressed, the terebra (*c*) detached from the sheaths (*a a*).
10. The terebra and its two spiculæ removed from the sheaths, and vertically compressed (see detailed description, ante p. 119).
11. Base of wings of male of *S. ephippium*.
12. Antenna of male of *S. cylindrica*.
13. Head of male of ditto.
14. Head of female of ditto.
15. Head of female of *S. ephippium*, var. with ocelli.
16. Head of normal female of *S. ephippium*.
17. Extremity of abdomen of female with the spiculæ unequally protruded in dying.

### PLATE V.

Fig. 1. *Scleroderma bicolor*, female; 1 *a*, mandible of ditto; 1 *b*, maxilla; 1 *c*, labium and palpi; 1 *d*, antenna of ditto; 1 *e*, part of fore leg of ditto.

2. *S. Wollastonii*, male; 2 *a*, base of fore wing of ditto.
3. *S. vigilans*, abnormal female with wings and ocelli; 3 *a*, base of fore wing of ditto; 3 *b*, head of ditto.
4. *S. vigilans*, abnormal female without wings, but with ocelli; 4 *a*, head of ditto.
5. *S. soror*, female.
6. *S. Fonscolombei*, male.
7. *S. linearis*, male.

8 *a*. Male organs of generation of *S. cylindrica*.

### PLATE VI.

Fig. 1. *Cephalonomia formiciformis*, male.

2. Ditto, female winged; 2 *a*, antenna of ditto; 2 *b*, base of fore wing.
3. Ditto, female without wings, but furnished with ocelli.

4 *a*. Head of male of ditto ?, from Indian corn; 4 *b*, base of fore wing of ditto.

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FIG. 5. *Cephalonomia? peregrina*, male; 5 *a*, mandible; 5 *b*, base of fore wing.

6. Ditto, female? 6 *a*, base of fore wing.

7. *C. fuscicornis*, male; 7 *a*, mandible; 7 *b*, maxilla; 7 *c*, labium and palpi.

8. *C. cursor*, wingless male; 8 *a*, antenna of male; 8 *b*, maxilla of ditto; 8 *c*, base of fore tarsus; 8 *d*, base of hind tarsus; 8 *e*, extremity of ditto.

## PLATE VII.

FIG. 1. *Methoca californica*. female.

2. *M. hæmorrhoidalis*, female.

3. *Apenesia Chontalica*, female; 3 *a*, mandible; 3 *b*, base of anterior tarsus; 3 *c*, middle leg; 3 *d*, hind leg.

4. *A. modesta*, female; 4 *a*, mandible; 4 *b*, maxilla; 4 *c*, labium and palpi.

5. *Thynnus picinus*, female; 5 *a*, antenna of ditto; 5 *b*, hind leg of ditto.

6. *Pristocera depressa*, female; 6 *a*, antenna of ditto; 6 *b*, maxillary palpus; 6 *c*, labium and palpi.

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## IX. *Description of a new Species of* Corduliina (Gomphomacromia fallax) *from Ecuador.* By R. M'Lachlan, F.R.S., &c.

[Read April 6th, 1881.]

The following description should have appeared as a foot-note, attached to the observations on *Gomphomacromia Batesi*, at p. 26 *ante*:—

*Gomphomacromia fallax*, n. s.

Wings hardly tinged; neuration black; a slight fuscous mark at the extreme base, which in the posterior (especially in the female) is slightly prolonged at the base of the subcosta; in the male the area against the membranule in the posterior is sometimes tinged with yellow, and in the female the base of both pairs is tinged with yellow up to the inner triangles: pterostigma dark brown (2 mm. long in the male, 2½ mm. in the female); membranule whitish cinereous, paler at the base; a single row of post-trigonal cellules, but the first cellule (rarely the second also) is double; *sectors of the arculus distinctly soldered at the base*, more so in the posterior than in the anterior, and in the male than in the female (in the former they are so much united as to become petiolate); second costal space empty in its basal fourth; 8—9 ante- and post-cubitals, male, or 9—10 ante-cubitals, and 8 post-cubitals, female, in the anterior wings.

Blackish or dark brown, clothed with cinereous pilosity. Front olivaceous brown, with blackish pilosity; labrum and lobes of labium somewhat yellowish. Thorax with a narrow yellow dorsal crest, a broad and very distinct oblique yellow band on the sides between the wings, and a less distinct inferior terminal band; breast somewhat testaceous. Abdomen very slender, scarcely dilated towards the apex in the male; black, somewhat testaceous at the base; a yellow spot on each side of the dorsum (divided only by the dorsal crest on segments 3—8, those on segment 2 larger and more separated). Legs short, black, the femora more or less brownish internally (and sometimes also externally); lower tooth of the claws somewhat shorter and stouter than the upper.



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♂. Superior appendages black, cylindrical, slightly curved downwards, scarcely dilated at the apex, subobtuse, longer than the 9th segment. Inferior appendages black, shorter, longer than broad, very concave above, the apex scarcely excised, but each angle is there produced into a straight tooth-like process. In the middle of the 9th segment beneath are two contiguous, rounded, scale-like lobes.

♀. The 9th and 10th segments very short above, and, with the appendages, elevated at an acute angle with the line of the rest of the abdomen (the 8th segment also short, cut off very obliquely above); appendages as long as, or longer than, the 9th and 10th segments combined, black, very hairy, straight, subcylindrical and acute; immediately below them is a black, very hairy, cushion-like prominence, slightly excised on its apical edge. The vulvar scale forming two slender, laterally compressed, contiguous black blades, 1½ mm. long, each subobtuse at the apex; at the base of these blades above, are two short, slender, brown styles, and above these are two longer, divergent, black cylindrical styles.

Length of abdomen, male, 28—30 mm.; female, 30—31 mm. Length of posterior wing, male, 25—27 mm.; female, 29 mm. Expanse, male, 52—55 mm.; female, 58—59 mm.

*Hab.* Intaj (or Intac), Ecuador (*Buckley*). I have examined three males and two females.

In general structure this is allied to the Chilian *G. paradoxa*, Brauer, and it is possible that *Gomphomacromia* should more especially be limited to these two species; but it is abundantly distinct specifically, not only in colour, but also in structure. The sectors of the arculus are more decidedly petiolate than in any other species of this section of *Corduliina* (excepting the anomalous African form just described by de Selys as *Neophya*, C. R. Soc. Ent. Belg., 1881, p. xvi.); the costa wants the coarse serration seen in *G. paradoxa*. The extraordinary anal structure of the female is quite analogous to that of *G. paradoxa*; but the elevation of the last two segments so separates them and the appendages from the much elongated vulvar scale, as to cause the apex of the abdomen to assume a furcate appearance.

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## X. *Some additions to Mr. Marshall's Catalogue of British* Ichneumonidæ. By John B. Bridgman.

[Read April 6th, 1881.]

At the earnest request of Mr. E. A. Fitch several of our leading lepidopterists have kindly saved from destruction such Ichneumons as they *unfortunately* have reared, and since many rare or local Lepidoptera have been bred, as a natural consequence some good species of Ichneumons also have been bred and preserved which otherwise would have been lost. At the same time many of the commoner Ichneumons have occurred; still, in very many instances, the host has been identified, which will materially increase our knowledge of their economy. Many of these specimens have been sent to me for examination, through the kindness of Mr. Fitch, and rarely indeed was a box examined that did not contain some addition to our fauna. Most frequently these were continental species, but occasionally a form presented itself of which I could find no description—notably three species of *Limneria*, all of which are very decided in colour and structure; I have searched in vain through Gravenhorst, Ratzeburg, Holmgren, Brischke, and Tschek. As these were reared from scarce Lepidoptera (*Oxyptilus teucrii*, *Nola albulalis*, and *Elachista monticolella*), it is very probable they may be new species. Several of Foerster's species of *Pezomachus* are also added, which I detected amongst a large number of specimens mostly captured by Mr. T. R. Billups, who has been very successful in taking these little apterous Ichneumons; some of these, however, I had already taken in this neighbourhood.

Several species of *Ichneumones pneustici* are also included, as well as two more of Wesmael's genera of the same subfamily (*Oiorhinus* and *Æthecerus*); these were captured by beating into an umbrella just before dusk towards the end of summer and autumn.

It is with great diffidence that I venture to describe and name those insects of which I was unable to find any previous description, for the literature pertaining to



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the parasitic Hymenoptera is so scattered that it is not easy to know when all the descriptions have been examined, and more especially for one living so far from London, and unable in consequence to avail himself of the splendid libraries of the different learned societies. I am deeply indebted to Mr. Fitch, who kindly sent me any books or papers which he thought would be of use, or that I required. I need not say how much we are obliged to Messrs. C. G. Barrett, J. Sang, G. Elisha, P. Cameron, E. A. Butler, G. C. Bignell, V. R. Perkins, T. R. Billups, the late W. P. Weston, and others for the assistance they have rendered in sending these insects. Mr. Cameron has lately sent me about a thousand specimens of his Scotch Ichneumons to examine, and, when I have had time to get through them, many species new to our fauna will most probably be found amongst them. In this paper reference is made to those species which have been previously noticed, but have occurred since the publication of Mr. Marshall's last Catalogue.

## ICHNEUMONIDÆ.

### ICHNEUMONIDES OXYPYGI.

*Ichneumon stigmatorius*, Zett.

*Ichneumon eremitatorius*, Zett., Ins. Lapp. 364, 26, ♂.
*I. stigmatorius*, Zett., Ins. Lapp. 364, 27, ♀.
*I. ignobilis*, Wesm., Ichn. Misc. 17, ♀.
*I. dolosus*, Wesm., Ichn. Misc. 46, 34, ♀; Holm., Ichn. Suec. i., 116.

*Ichneumon rubricosus*, Holm.

*Ichneumon tenebrosus*, Wesm., Tent. 103, 111 (*partim*).
*I. rubricosus*, Holm., Ichn. Suec. i., 190.

Taken at Kingussie.

Females of what I believe to belong to these two species I detected amongst Mr. Cameron's Ichneumons.

### ICHNEUMONIDES AMBLYPYGI.

*Amblyteles flavocinctus*, Desv.

As I have had an opportunity of examining this handsome insect, which does not appear to be known on the Continent, I have added a fuller description of the

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structure than appears in Mr. Desvignes' description. (Cat. of Brit. Ichn. 23, 125.)

Finely punctured, apex of clypeus straight, behind the eyes narrowed; antennæ about half the length of the body, rather stout, not much thicker in the middle than at the base, apex gradually tapering to a fine point, distinctly serrated within, most strongly at the base. Scutellum very much elevated, gradually sloping behind, superior areas of metathorax 3, supero-medial area transverse, about twice as long as wide, incurved in front, straight behind, sides bulging outwards, posterior part indistinctly tridivided; spiracles linear; metathorax short above, very much rounded behind; parapsides indistinct, keels extending only to the base of the scutellum; areolet of wing not wide, recurrent nervure received beyond the centre, transverse anal nervure divided at the lower third; 1st segment of abdomen distinctly tridivided, central portion distinctly aciculate, lateral divisions aciculate within, and with scattered punctures towards the outside; gastrocæli large, the space between them about as wide as the middle area of the post-petiole, aciculate between the gastrocæli; 2nd segment rather longer than wide, 3rd and remainder transverse; legs moderate.

ICHNEUMONIDES PLATYURI.

*Platylabus Thedenii*, Holm.

Holm., Ichn. Suec. 329, 17, ♂, ♀.

A specimen of this species was sent to me by Mr. Fitch; it was bred from *Emmelesia unifasciaria* by Mr. George Elisha.

ICHNEUMONIDES PNEUSTICI.

*Herpestomus striatus*, n. s. (Pl. VIII., figs. 1, 2).

♀. Antennis basi, segmentis 2—4 et 5—7 margine apicali, pedibusque rufis; femoribus tibiisque posterioribus apice nigris.

♂. Pedibus rufo-flavis, posterioribus, coxis supra macula, femoribus et tibiis apice, tarsisque nigris.

♀. Head behind the eyes buccated; antennæ two-thirds the length of the insect, basal joint of the flagellum about twice as long as broad. Thorax finely punctured, keels of scutellum extending to the middle, the basal portion of the metathorax short, five superior areas,

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supero-medial area lunate, the slanting part deeply grooved, with no spines; 1st segment of the abdomen distinctly striated, a transverse groove at the base of the 2nd segment; this, as well as the remaining segments, finely reticulate, with fine scattered punctures; apical segments pubescent.

The male differs but slightly in the usual sexual characters; the supero-medial area of the metathorax is more transverse; the groove at the base of the 2nd segment is less conspicuous; and the thyridii more distinct.

♀. Black; base of antennæ (except the basal joint), and 2—4 abdominal segments, entirely red; apical margins of the remaining segments and legs red; apical half of hind femora and extreme apex of hind tibiæ nigro-fuscous; apical joint of all the tarsi black.

♂. Black; apex of 2nd segment, and base and apex of 3—5, reddish yellow; legs fulvous; hind ones, spot on the coxæ above, apical half of femora, tibiæ, and tarsi completely black. Length 6—7 mm.

The striated post-petiole and black scutellum readily distinguish this from all the species described by Wesmael.

One male and four females taken at Norwich in July and September.

*Dicœlotus Cameroni*, n. s. (Pl. VIII., fig. 3).

♀. Nigra, pedibus rufo-flavis, coxis posterioribus nigris, basi antennarum subrufis.

Antennæ about half the length of the insect, basal joints of the flagellum moniliform; head very shining, with a few minute scattered punctures. Thorax shining, mesothorax and scutellum with fine scattered punctures, metathorax very finely rugose; superior areas 5, supero-medial area subtriangular with a blunt apex; posterior areas 3, postero-medial slightly concave. Abdomen shining, punctures coarser than on the thorax, but rather scattered.

Black; mandibles and clypeus reddish yellow; antennæ fuscous, basal portion reddish brown; legs red, hind coxæ black.

One female taken at Norwich, middle of August, and I detected another amongst some Scotch Ichneumons belonging to Mr. P. Cameron.

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This insect is much more finely punctured than *D. pumilus*; the antennæ are longer and thinner, and the legs differently coloured.

*Phæogenes trepidus*, Wesm.

Wesm., Tent. 190, 16, ♀.

Amongst some Ichneumons sent to me to name by Mr. E. A. Fitch I detected a female of this species; it was captured by Mr. Bignell. I have also seen a specimen taken by Mr. T. R. Billups at Burford Bridge, in November, 1880.

*Phæogenes nanus*, Wesm.

Wesm., Tent. 190, 17, ♀.

I have taken two females which agree exactly with Wesmael's description of this insect, except that the mouth and front coxæ are dark, and there is no trace of red in front of the wings.

Taken at Norwich in July and August.

*Phæogenes impiger*, Wesm.

Wesm., Tent. 198, 30, ♂, ♀; Brischke, D. Ichn. d. Prov. W. u. E. Preus. 23.

I have taken a female of this insect at Norwich, September 19th, 1880.

*Phæogenes suspicax*, Wesm.

Wesm., Tent. 200, 33, ♂, ♀; Brischke, D. Ichn. d. Prov. W. u. E. Preus. 23.

In looking over Mr. Cameron's Ichneumons I found a female, and a male which I believe to be a variety of this species; in my own collection I have two males exactly like Mr. Cameron's. These three all differ from Wesmael's description in having the clypeus only pale yellow, and not the face also; the apex of the hind femora in one of my specimens is fuscous. Wesmael describes four varieties of the female; so it is not improbable that the male may also vary. These males do not agree exactly with any species described by Wesmael or Brischke.

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My specimens were taken at Norwich in July. I have also seen a female taken by Mr. Billups at Box Hill on March 21st of this year; the antennæ of this insect are entirely dark brown.

*Phœogenes similis*, n. s. (Pl. VIII., fig. 4).

Nigra, antennis basi superne excepte et margine segmento secundo rufis, pedibus plus minus fusco et rufo-piceis variegatis.

Head somewhat tumid, behind the eyes scarcely narrowed; clypeus smooth and shining, not depressed; face and forehead finely and rather closely punctured, interstices finely reticulate; antennæ slender, slightly thickened at the apical half, as long as the head, thorax, and 1st segment, third and fourth joints of about equal length and rather more than three times as long as wide; mesothorax rather more strongly punctured than the head, interstices reticulate, in front feebly trilobed; scutellum somewhat gibbose; metathorax shining, with fine transverse rugose markings; supero-medial area semioval, a little longer than wide, the sloping part rather more coarsely marked than the upper part, slightly hollowed out; postero-medial area not defined; legs slender, hind coxæ unarmed. Abdomen—1st segment elongate, slender, subpyriform, with slight acicula-tions; rest of the abdomen finely but densely punctate, rather coarsely rugose between the base of the 2nd segment and the thyridii, which are very distinct; abdomen slender and cylindrical, 2nd segment one-third longer than the width at its apex, 3rd subtransverse; aculeus distinctly projecting.

Black; mandibles piceous; antennæ pale piceous-red; scape black; 1—4 joints of flagellum piceous above, and articulations of the remainder dark; collar and incision of the 2nd abdominal segment piceous-red; anterior and middle legs piceous-red, femora, apex of middle tibiæ, and apical joints of both tarsi more or less infuscated, hind legs fusco-piceous, greater part of trochanters, base of femora, basal two-thirds of tibiæ, and 1—4 joints of tarsi piceo-rufous; tegulæ pale, stigma and nervures dark. One female, length 5·50 mm.

This insect was taken by Mr. Billups in 1880, and appears to me to come next to Wesmael's *P. argutus*, "coxæ unarmed, antennæ ferruginous"; it differs from

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the description of the above-mentioned insect in the colour of the legs and abdomen.

*Phæogenes formosus*, n. s. (Pl. VIII., fig. 5).

Segmentis 2—4 pedibusque rufis, femoribus posticis apice, tibiisque posticis basi et apice, apiceque tarsorum, nigris; antennis subtricoloribus.

Head behind the eyes scarcely narrow; antennæ long, first and second joints of the flagellum of equal length, twice as long as wide; scape dark brown; flagellum 1—3 joints brownish red, 9—11 whitish, the remainder reddish brown; head shining, finely punctured, punctures scattered. Thorax opaque, closely punctured; metathorax rugosely punctate, lines of the areas very distinct, supero-medial area long and narrow, not distinctly closed behind, sides almost parallel, and a supernumerary line running up the centre almost to the front. Abdomen: 1st segment shining, with no perceptible sculpture, 2nd very finely punctured, the punctures running into acicu-lation, 3rd and following ones densely and finely punctured, with rather scattered hairs and pits; tegulæ yellow-brown, stigma pale fuscous; the rest as in the diagnosis. Length 6·50 mm.

One female taken at Norwich in September.

This insect belongs to Wesmael's genus *Diadromus*.

*Oiorhinus pallipalpus*, Wesm.

Wesm., Tent. 202; Brischke, D. Ichn. d. Prov. W. u. E. Preus. 25.

I have taken three females of this pretty little Ichneumon near Norwich, one in July, the other two in September.

*Æthecerus nitidus*, Wesm.

Wesm., Tent. 204, 2.

This species I have also taken in this neighbourhood in July and September. One female agrees exactly with Wesmael's description; the other two differ from it as follows:—

Var. 1. Hind coxæ and 1st abdominal segment, greater part fuscous.

Var. 2. Hind coxæ, collar, and 1st abdominal segment,

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except the apex, black. Post-petiole more or less distinctly finely aciculate.

*Æthecerus longulus*, Wesm.

Wesm., Tent. 206, 6; Brischke, D. Ichn. d. Prov. W. u. E. Preus. 25.

I took in June, what I believe to be, a female of this species; it differs from Wesmael's description only in having a fuscous spot on each side of the three red abdominal segments. Brischke mentions a specimen having a black band on the 4th segment.

Taken at Norwich.

CRYPTIDÆ.

*Phygadeuon tarsatus*, n. s. (Pl. VIII., figs. 9, 9 *a*).

Nigra, tarsis posticis annulo albo; ♂ tibiis anticis pallidis; ♀ tibiis rufis, annulo antennarum albo.

Head rather wide behind the eyes, somewhat narrowed in the female, distinctly so in the male; clypeus distinctly separated, apex truncated; face more finely punctured in the male than in the female, which is rather coarse; forehead strongly punctured, punctures rather close, interstices reticulate, with a well-defined central depression; antennæ of female moderate, first joint of flagellum about twice as long as wide, and longer than the second, sixth quadrate. Mesothorax closely and finely punctured, parapsides faintly impressed in front in female, more distinct in male, scutellum shining, with more scattered punctures; metathorax finely rugose-punctate, interstices reticulate, hinder cross line distinct, fainter in the middle, the middle lines very faint, a supero-medial area hardly defined; back of the metathorax angular at the sides; spiracles ovate, more so in the male than in the female. Legs somewhat slender; areolet hardly converging above, no nervelet, transverse anal nervure subopposite and divided below the middle. Abdomen smooth and shining, finely pubescent in the male, female ovate, 1st segment gradually widening to the apex, which is one-third the length of the segment, slightly bulging out before the apex, 2nd transverse. Male, 1st segment slender, post-petiole scarcely wider than the petiole, spiracles very minute and only just projecting, distinctly curved; 2nd, 3rd, and 4th segments longer than wide, 5th

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transverse, 2nd more than twice as long as wide; aculeus three-fourths the length of the abdomen.

♀. Black; apex of front femora, tarsi, and tibiæ red, apex of the latter more or less infuscated; hind tarsi brown, third and fourth joints sordid white; stigma and tegulæ pale piceous; 6—10 joints of antennæ white, sometimes 5 and 11 partly so. 6—8 mm.

♂. Black; clypeus and two broad marks by the eyes below the antennæ yellow; anterior and intermediate tibiæ and tarsi testaceous-yellow; apex of front femora, extreme base and apex of hind femora, and base of hind tibiæ red, 2—4 and base of 5, joints of hind tarsi white (antennæ wanting). 9 mm.

Three females and one male taken by Mr. P. Cameron near Lamlash, Arran, towards the middle of September.

*Phygadeuon fumator*, Gr. (Pl. VIII., figs. 6—8).

Towards the end of August last year I took, by beating, a semi-apterous Cryptid which I could not make out, and amongst Mr. Cameron's insects I found three more of these nondescripts. From a careful examination, I believe them to be varieties of *Phygadeuon fumator* with abbreviated wings: they differ very slightly from that insect; but my specimen has the metathorax slightly more rugose than any *P. fumator* I have; unfortunately I cannot see this part of Mr. Cameron's insects very plainly, as the wings have dried up over the metathorax; they vary slightly in coloration. My specimen is the palest; it has all the coxæ and trochanters pale yellowish red, the first four joints of the antennæ and base of the fifth red, and the 2nd abdominal segment and basal half of the 3rd red. Of Mr. Cameron's three specimens one has the coxæ and trochanters like mine; the other two have the hind coxæ more or less stained with brown, as well as the apex of the hind femora. The antennæ of one show the red base like mine, but are fuscous above, especially in the scape; of the other two, one has the first and second joints and the other the second joint reddish; all three have the 2nd abdominal segment and the basal margin of the 3rd red. At first I thought I had discovered a new species (most likely of *Aptesis*), but I am inclined now to think they are only varieties of the very variable *P. fumator* (Gravenhorst described five varieties of



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the female) with wings much abbreviated, reaching to about the apical margin of the 1st segment. Length 3—4 mm.

*Phygadeuon aberrans*, Tasch.

Tasch., Zeits. Ges. Nat. 1865, p. 52, 86, ♀.

*Phygadeuon abdominator*, Grav., I. E. ii. 728, var. 2.

This species is named by Taschenberg in 'Die Schlupfwespen-familie Cryptides,' page 52, and is described by Gravenhorst, Ichn. Europ., vol. ii., page 728, as var. 2 of *Phygadeuon abdominator*. I have taken two insects which agree exactly with Taschenberg's description of *P. aberrans* (Gravenhorst makes no mention of the red marks at the apex of the scutellum); they however certainly are not *Phygadeuon*, but true Ichneumons, and, I believe, only small specimens of *Ichneumon lanius*. Wesmael gives, as the female of *I. lanius*, Gravenhorst's *Phygadeuon terminatus*, *l. c.* vol. ii., p. 664, which, as far as concerns the coloration, agrees well with *I. lanius* of Wesmael; but Gravenhorst says, "segmenti 1 lævi nigro"; Wesmael, in Tent., p. 105, "Post-petiolus feminæ confertissime punctatus." Holmgren says the same (Ichn. Suec., vol. i., p. 159). In this respect the female of *I. lanius* differs from *Phygadeuon terminatus*. I think *Phygadeuon aberrans*, Tasch., will prove to be a synonym of *Ichneumon lanius*.

*Phygadeuon nanus*, Gr.

*Cryptus nanus*, Grav., I. E. ii. 585, 113, ♀.

*Phygadeuon nanus*, Tasch., Zeits. Ges. Nat. 1865, p. 25, 9, ♀.

Entom. xiii. 53, ♀.

*Phygadeuon probus*, Tasch.

*Phygadeuon improbus*, Grav., I. E. ii. 672, 169, var. 2, ♀.

*P. probus*, Tasch., Zeits. Ges. Nat. 1865, 42, 52, ♀.

In the description of *improbus* or *probus*, neither Gravenhorst nor Taschenberg mentions the whitish short line or spot on the frontal orbits; the metathorax varies much in the distinctness of the areas. From Taschenberg's descriptions I can detect no sufficient difference to form another species from the var. 2 of Gravenhorst.

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The one I take in this neighbourhood agrees best with *P. probus*, Tasch.

*Cryptus antennatus*, n. s. (Pl. VIII., fig. 10, 10 *a*).

♀. Abdomine medio rufo; femoribus tibiis tarsisque anterioribus fusco-rufis, tarsis posticis annulo albo.

Finely and closely punctured; head behind the eyes slightly narrowed, antennæ filiform, rather thicker at the apex than at the base; thorax distinctly trilobed, metathorax with two distinct transverse lines, and a quadrate area above the front line, spiracles small and circular; 1st segment of abdomen rather slender, gradually tapering, one-third wider at the base than at the apex, spiracles not projecting, abdomen elongate-ovate, 2nd segment as long as wide, remainder transverse; aculeus about two-thirds the length of the abdomen; areolet of wings pentagonal, neither wide nor narrow above, the recurrent nervure received beyond the middle, a trace of the nervelet visible, transverse anal nervure subopposite, and divided just below the middle.

Black; 1—4 segments of abdomen red, base of 1 and apex of 4 more or less brown or black. Legs fuscous-red, the front ones dilated, hind femora towards the apex and hind tibiæ rather infuscated; coxæ, trochanters, apex of front tarsi, intermediate and hind tarsi, brown or black; second, third and base of fourth, joints of hind tarsi white, base of second joint more or less dark. Length 3, 3·5, 2·5 mm.

This insect apparently belongs to Thomson's subgenus *Cænocryptus*. I took two females in this neighbourhood on the 4th of April, 1874.

*Cryptus amœnus*, Gr.

Grav., I. E. ii. 623, 135, ♀; Tasch., Zeits. Ges. Nat. 1865, 100, ♀.

Entom. xii. 55, ♂, ♀.

*Cryptus elegans*, Desv.

*Cryptus elegans*, Desv., Cat. Brit. Ichn. 57, 53, ♂, ♀.
*Hygrocryptus Drewseni*, Thoms., Opus. Ent. fasc. v. 514, 2, ♂, ♀.

Entom. xiii. 52.

This pretty and distinct species was first described

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by Desvignes in the 'Museum Catalogue of British Ichneumons,' p. 57. Mr. Marshall considered it only a variety of *C. carnifex*, and included it in his 1872 'Catalogue,' p. 41, amongst the synonyms of that insect. Later on Thomson, in 'Opuscula Entomologica,' fasc 5, p. 514, has described it as *Hygrocryptus Drewseni*, n. s.; but, according to the law of priority, this name must rank as a synonym to Desvignes' name of *elegans*.

Thomson has named another Cryptid *elegans* (*Hoplocryptus elegans*, *l. c.* p. 511). I think this ought to be altered, and therefore propose that it be changed to *H. Thomsoni*.

*Cryptus palustris*, Thoms.

*Hygrocryptus palustris*, Thoms., Opus. Ent. fasc. v. 514, 3, ♀.

Entom. xiii. 52.

I have taken two males of a *Cryptus* which I believe to be this species; it belongs to the same subdivision as *elegans* and *carnifex*; they have black coxæ, but otherwise much like these two species; but as Thomson only described the female (*l. c.*, p. 514), and as I have taken males only, there must be some doubt as to their identity.

*Cecidonomus Westoni*, m.

Entom. xiii. 264.

*Cecidonomus gallicola*, m.

Entom. xiii. 265.

*Cecidonomus ? rufus*, m.

Entom. xiii. 265.

*Agrothereutes Batavus*, Voll.

Voll., Tijd. v. Ent. xvi., p. 209 : Pinac. pl. 37, fig. 2.

This insect is figured in Vollenhoven's 'Pinacographia,' Plate 37, fig. 2. Brischke says that probably *A. Hopei*, Gr., is a variety of *A. abbreviator*, Fabr.; if so, this may be another variety of the same species.

A female was taken last September in a sand-pit in a wood at Guestling, near Hastings, by the Rev. E. N. Bloomfield.

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*Stibeutes Heinemanni*, Foerst.

Foerst., Mon. Gat. Pez. 80, 2, ♀.

Entom. xii. 15 (Dr. Capron).

*Aptesis vestigialis*, Foerst.

'Monographie der Gattung Pezomachus,' 42, 8.

A female of this species was bred by Mr. Champion from *Coleophora solitariella*, Zell., together with a small male *Limneria*, which I am unable to identify. This specimen differs slightly from Foerster's description in the following particulars:—

1st. There is no trace of red in the inner orbits.

2nd. The antennæ have the first five joints entirely, the next two partly, reddish brown, 8—11 white, marked above only, not ringed.

3rd. The lines on the metathorax are scarcely perceptible.

*Pezomachus nigritus*, Foerst.

Foerst., Mon. Gat. Pez. 80, 19.

Mr. Billups has taken at Deal (August, 1880), a small black *Pezomachus*, which I believe to be this species.

*Pezomachus distinctus*, Foerst.

Foerst., Mon. Gat. Pez. 123, 54.

This species was taken by Mr. Billups at Mickleham in October last.

Foerster says the legs are clear red-yellow, but the one now before me has the two last tibiæ faintly infuscated before the base and at the apex.

*Pezomachus intermedius*, Foerst.

Foerst., Mon. Gat. Pez. 124, 55.

This species seems far from rare; I have taken between thirty and forty specimens in this neighbourhood. Mr. Billups has also taken it freely at Mickleham and elsewhere, and several specimens have been sent by Mr. Butler from Hastings. Foerster describes it from a single female, which is a very pale variety. The majority of my captures have the thorax quite black, and from

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this they vary to the thorax almost entirely red; the same with the coxæ; the 1st segment of the abdomen also ranges from red to piceous, with the base darker.

*Pezomachus incertus*, Foerst.

Foerst., Mon. Gat. Pez. 128, 61.

This species also does not appear to be uncommon. Mr. Billups captured five or six specimens at Headley Lane last year, and it is not scarce round Norwich. Like the last species, this varies much in the intensity of the colour of the legs and thorax.

*Pezomachus Müller*i, Foerst.

Foerst., Mon. Gat. Pez. 127, 60.

This is another species taken by Mr. Billups at Weybridge, Leatherhead, and Rainham; all during 1880.

*Pezomachus juvenilis*, Foerst.

Foerst., Mon. Gat. Pez. 136, 72.

I took two specimens of this species at the end of September last year in this neighbourhood; it has also been taken by Mr. Billups in the Mickleham Valley, October, 1880.

*Pezomachus dubitator*, Foerst.

Foerst., Mon. Gat. Pez. 159, 105.

I have taken several specimens of a *Pezomachus* which I think must be this species, but they differ slightly from Foerster's description; he says, "the abdomen to the apex densely punctured and haired," which, I suppose, means the whole abdomen is evenly sculptured. This is not the case with my insects; the first three segments are densely haired; the hairs on the remainder are more scattered. Similar specimens have also been taken by Mr. J. W. May and Mr. E. A. Butler. It is much like *P. transfuga*.

*Pezomachus micrurus*, Foerst.

Foerst., Mon. Gat. Pez. 155, 98.

I have seen a *Pezomachus* which I believe to be this species; it was taken by Mr. E. Parfitt in the

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neighbourhood of Exeter, by sweeping, July 12th, 1866. I have also seen it in a collection belonging to the Rev. O. P. Cambridge.

*Pezomachus procursorius*, Foerst.

Foerst., Mon. Gat. Pez. 216, 175.

A *Pezomachus* sent by Mr. G. C. Bignell, of Plymouth, agrees with this species.

OPHIONIDÆ.

*Ophion minutum*, Kriech.

*Ophion minutum*, Kriechbaumer, Entom. Nacht. 1879, p. 104; Voll. Pinac. pl. 39, fig. 1.

Entom. xiii. 54.

This species has also been taken by Mr. Bignell in the neighbourhood of Plymouth; by Mr. F. W. Savage at Hastings; and by Mr. T. Wilson near York.

*Agrypon septentrionale*, Holm.

*Anomalon septentrionale*, Holm., Consp. Anom. Suec. 181, 16, ♀; Holm., Mon. Oph. Suec. 27, 18, ♀.

This species was sent to me by Dr. Capron, and was bred by Mr. S. D. Bairstow.

*Agrypon geniculatum*, Holm.

*Anomalon geniculatum*, Holm., Consp. Anom. Suec. 182, 17, ♂, ♀; Holm., Mon. Oph. Suec. 27, 19, ♂, ♀.

Entom. xiii. 255.

*Paniscus tarsatus*, Brischke.

Brischke, D. Ichn. d. Prov. W. u. E. Preus. 31, ♂, ♀.

This pretty and distinct species I am enabled to add to the British list through Mr. Bignell, of Plymouth, who bred both sexes from *Eupithecia abbreviata*, 1880.

*Limneria Fitchii*, n. s. (Pl. VIII., fig. 13).

♀. Nigra, scapo antennarum subtus, pedibusque rufo-flavis, coxis anterioribus apicis trochanteribusque flavidis; areola nulla; aculeo brevissimo.

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Head behind the eyes narrow. Metathorax finely sculptured, five superior areas, lines fine, supero-medial area elongate; closed behind, widest in front. Post-petiole with almost straight sides, gently tapering; 2nd segment a quarter longer than wide; 3rd subquadrate; this and the following ones compressed; aculeus just projecting, curved upwards. No areolet; transverse anal nervure not broken.

Black; scape of antennæ beneath and legs reddish yellow; apex of front and intermediate coxæ and trochanters yellowish; hind coxæ black; apex of tarsi piceous. Female. Length 6 mm.

Bred by Mr. Bignell from *Nola albulalis*. This species, contrary to the general habits of this genus, does not spin a cocoon, but emerges from the long-haired, pale-coloured larva of its host.

*Limneria moesta*, Gr.

Grav., I. E. iii. 995.

Head transverse, narrow behind the eyes. Areolet irregular, sometimes petiolated, sometimes subsessile; transverse anal nervure sometimes obsoletely divided; back part of metathorax somewhat concave, sculpture rough; areas, from the roughness, hardly perceptible; upper part very short, the groove running from the post-scutellum to the petiole; 2nd segment of the abdomen nearly a half longer than wide, not much wider at the apex than at the base; 3rd a trifle longer than wide, much narrower at the base than at the apex.

Three males from Mr. Bignell, who bred them from *Hybernia progemmaria* and *H. defoliaria*.

They seem to vary in the colouring of the abdomen. I have added this to Gravenhorst's description, because I cannot find the structure described anywhere.

Since the above was in type I have received a female of this species from Mr. Bignell; it does not differ in colour or structure from the male. The aculeus is hardly exserted.

*Limneria Barrettii*, n. s. (Pl. VIII., fig. 14).

Nigra, scapo antennarum subtus flavo, femoribus tibiis tarsisque rufo-flavis, tibiis posterioribus apice et

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ante basin fuscis; segmenti 1—3 rufo-cingulatis, aculeo primo segmento breviore.

Head transverse, narrow behind the eyes. Thorax a little longer than high; superior areas of metathorax 3; supero-medial area pentagonal, more or less narrowed behind, not distinctly closed; side areas with a vestige of a dividing line; metathorax coriaceous. Abdomen slightly compressed at the apex; post-petiole subquadrate; tubercles prominent; 2nd segment about a quarter longer than wide; 3rd a little longer than wide, or subquadrate. Areolet of wings subsessile, or subpetiolated, recurrent nervure received just beyond the middle; transverse anal nervure not divided. Aculeus about two-thirds the length of the 1st segment.

Black; mandibles, palpi, and scape of antennæ beneath yellowish. Legs reddish yellow; coxæ and hind trochanters nigro-fuscous; intermediate and hind femora reddish; apex of hind tibiæ and extreme apex of tarsal joints fuscous, and a rather faint fuscous ring before the base of the hind tibiæ; intermediate tibiæ and tarsi sometimes obscurely marked in the same manner. Abdomen: apex of the 1st segment and middle of the 2nd and 3rd more or less red or chestnut, basal and apical margins generally black. Male and female. Length about 6 mm.

Bred by Mr. C. G. Barrett from *Oxyptilus teucrii*.

*Limneria monticolana*, n. s.

Nigra, pedibus rufis, coxis et femoribus posticis nigropiceis; segmentis 2 et 3 abdominis cingulo apicali rufotestaceo; scapo subtus plus minusve testaceo.

Head tumid, not narrow behind the eyes; face narrower below than above; clypeus sinuous; base of mandibles not quite touching the eyes; eyes entire against the antennæ. Thorax elongate; area of metathorax 5 complete, supero-medial coffin-shaped. Post-petiole of abdomen one-third longer than wide, with a depression between the spiracles; 2nd segment of the male one-third longer than wide, 3rd longer than wide, 4th subquadrate; the 2nd segment of the female subquadrate, or slightly longer than wide; the abdomen in both sexes subcompressed. Areolet of wing subsessile; recurrent nervure received just beyond the middle; transverse anal nervure not divided (or at least not



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distinctly so); aculeus not projecting; antennæ three-quarters the length of the insect.

Black; mandibles yellowish, apex black; apex of scape beneath more or less testaceous; antennæ black beneath. Abdomen: 2nd and 3rd segments with a distinct testaceous apical band, the next 1, 2 or 3 segments more or less testaceous at the sides; venter pale. Legs: front and intermediate coxæ brown at the base, fulvous at the apex; hind ones entirely nigro-fuscous; trochanters fulvous, paler than the rest of the legs; hinder brown, maculated at the base; femora fulvous, intermediate ones brown-stained; hind pair brown, extreme base and apex a little paler; tibiæ fulvous, hinder infuscated towards the apex, much more slightly so at the base, sometimes not at all. One female and two males. Length about 5 mm.

Bred from *Elachista monticola* by Mr. J. Sang last summer.

*Limneria carbonaria*, Brischke.

Brischke, D. Ichn. d. Prov. W. u. E. Preus. 54.

I have taken a *Limneria* in this neighbourhood, which agrees better with this insect than any other I can find described; the only difference is that Brischke says "the disco-cubital nervure angled, with a short nervelet;" in my specimens, although the nervure is angled, yet the nervelet is absent. I have also seen the same insect bred by Mr. Bignell from *Cidaria pyraliata*.

*Limneria tricincta*, Gr.

*Campoplex tricinctus*, Grav., I. E. iii. 530, 53, ♂.
*Limneria tricincta*, Holm., Mon. Oph. Suec. 80, 47, ♀.

I have received a female specimen of this species from Mr. C. G. Barrett, who bred it from *Ebulea stachydalis*. The 3rd segment is entirely red.

*Limneria lugubrina*, Holm.

Holm., Mon. Oph. Suec. 64, 19, ♀.
Entom. xiii. 19, 53.

*Limneria cursitans*, Holm.

Holm., Mon. Oph. Suec. 64, 20, ♀.
Entom. xiii. 53.

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*Limneria volubilis*, Holm.

Holm., Mon. Oph. Suec. 65, 21 (♂ ?), ♀.

Entom. xiii. 53, 256.

*Limneria fuscipes*, Holm.

*Campoplex fuscipes*, Holm., Act. Holm. (1854), 16, 22, ♂.

*Limneria fuscipes*, Holm., Mon. Oph. Suec. 66, 22.

Proc. of the Nat. Hist. Soc. of Glasg., vol. iv., pt. 1, p. 108.

*Limneria vestigialis*, Ratz.

*Campoplex vestigialis*, Ratz. Ichn. d. Forst. ii., 88, ♀.

*Limneria vestigialis*, Proc. Nat. Hist. Soc. Glasg., vol. iv., pt. 1, p. 108.

This and the species next above are recorded as British by Mr. P. Cameron.

*Limneria vulgaris*, Tschek.

Tschek, Ichn. Fragm. 61.

I have seen a *Limneria*, taken by Mr. G. C. Bignell, which agrees exactly with Tschek's description of this insect. It is a female.

Mr. Bignell informs me that he believes it was captured at Bickleigh, about ten miles from Plymouth.

*Limneria deficiens*, Gr.

Grav., I. E. iii. 474, 12.

Mr. Bignell has bred a *Limneria* from *Eupithecia pulchellata*, which agrees better with Gravenhorst's description of this insect than any other I can find. It differs only in having the trochanters yellow, hind pair black at the base. These insects often vary in coloration; and as Gravenhorst described his species from a single insect this may be a variety of it. Length 2½ lin.

*Limneria clausa*, Brischke.

Brischke, D. Ichn. d. Prov. W. u. E. Preus. 47, ♀.

Mr. Bignell has bred a male and female of a *Limneria*, which agree exactly with this species; the male differs

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only from the female in having the hind tibiæ dark red-brown, paler in the middle. These were bred from *Hybernia progemmaria*.

*Mesochorus aciculatus*, n. s. (Pl. VIII., fig. 11).

Facie, abdomine macula media, piceis; pedibus fulvis, tibiis posticis, tarsisque maxima ex parte fuscis; stigma nigro-picea; abdomine primo segmento aciculato.

Post-petiole aciculate, somewhat like *complanatus*, but the stigma is dark, and the insect half as large again.

Head not buccated, rather narrow behind the eyes; antennæ longer than the body; internal cubital nervure interstitial; transverse anal nervure not divided; area of metathorax 5, subdistinct; thorax finely and minutely punctured; 1st segment of abdomen distinctly aciculate, a slight central depression before the apex; tubercles distinct, this latter smooth and shining; 2nd and 3rd segments subquadrate.

Black; face and by the ocelli piceous; collar partly, and a spot in the centre of the mesothorax, piceous; a pale piceous blotch spreading from the apex of the 2nd abdominal segment and along the back of the 3rd; legs fulvous, apex of hind tibiæ fuscous, and all the tarsi, except the bases of the first joints, which are pale; stigma and nervure black-brown, extreme apex of former paler; base of wings yellow. Female. Length 4 mm.

Received from Mr. Bignell, Plymouth, who bred two females. They are hyperparasitic on an *Apanteles* (probably *A. glomeratus*), parasitic on *Pieris brassicæ*.

*Mesochorus gibbulus*, Holm.

Holm., Act. Holm. (1854), 60, 3, ♀.
Holm., Mon. Oph. Suec. 124, 14, ♂, ♀.

This very distinct species is added to our list on the strength of a specimen which I found amongst Mr. Cameron's Scotch Ichneumons.

TRYPHONIDÆ.

*Catoglyptus pulchricornis*, Holm.

Holm., Mon. Try. Suec. 109, 7, ♀.
Entom. xiii. 87. (Dr. Capron.)

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*Perilissus bucculentus*, Holm.

Holm., Mon. Try. Suec. 123, 5, ♂, ♀; Brischke, D. Ichn. d. Prov. W. u. E. Preus. 38, ♂.

An insect was sent to Mr. E. A. Fitch, by Mr. E. A. Butler, which I believe to be this species, although it differs slightly from Holmgren's description, in that the 3rd segment is hardly transverse, and the hind coxæ entirely black.

*Perilissus pictilis*, Holm.

Holm., Mon. Try. Suec. 125, 11, ♂, ♀; Voll., Pinac. pl. 33, fig. 6.

Entom. xiii. 54.

*Perilissus fumatus*, m.

Entom. xiii. 54.

*Mesoleius segmentator*, Holm.

Holm., Mon. Try. Suec. 165, 83, ♀; Brischke, D. Ichn. d. Prov. W. u. E. Preus. 51, ♂, ♀.

A single male sent to me by Mr. Fitch.

*Mesoleius rufolabris*, Zett.

*Bassus rufolabris*, Zett., Ins. Lapp. 380, 15, ♀.
*Bassus erythrocerus*, Zett., Ins. Lapp. 380, 16, ♀; Holm., Mon. Try. Suec. 171, 96, ♂, ♀; Holm., Disp. Syn. Mesol. Scand. 46, 118, ♂, ♀.

This species is recorded on the strength of a specimen sent by Mr. E. A. Fitch, which was captured at Wymondley, Herts, in August, 1880, by Mr. E. A. Butler. It differs slightly from Holmgren's description, in having a yellow line under the wing.

*Mesoleius Bignellii*, n. s. (Pl. VIII. fig. 12).

♀. Abdominis medio rufo, tarsis tibiisque testaceo-flavis, posticis apice nigro, femoribus anterioribus fulvis, basis nigris.

Very much like *M. sulphuratus*, Gr., but differs in having the head more narrowed behind the eyes, the mesothorax more distinctly trilobed; the 1st segment of the abdomen much shorter and slightly wider, the other

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segments are much shorter; the antennæ are black, and the tarsi are much paler.

Head behind the eyes narrow; antennæ as long as the body, head reticulate; thorax distinctly punctured, interstices reticulate; mesothorax trilobed; metathorax rugose, without areæ; mesopleura appears to be punctate-rugose (as it is gummed down cannot be quite certain). Abdomen: 1st segment reticulate, with scattered hair pits; spiracles situated just behind the middle; 2nd segment subquadrate, about one-fifth longer than the 1st; third subtransverse. Wings: areolet small and petiolated; recurrent nervure received behind the centre; transverse anal of hind wing behind the brachial fork, and divided above the centre.

Black; coxæ and trochanters black; femora, front ones yellow-fulvous, black at the base, middle ones black to the centre, hind pair entirely black; tibiæ fulvous-yellow, apical third of hind ones black; tarsi yellow-fulvous; abdomen, extreme apex of 1st segment, the whole of 2nd and 3rd, red; wings tawny, tegulæ black, stigma pale testaceous, nervures fulvous. One female. Length 12 mm.

From Mr. Bignell, Plymouth.

*Mesoleius fallax*, Holm.

Holm., Mon. Try. Suec. 168, 89, ♂, ♀; Holm., Disp. Syn. Mesol. Scand. 42, 106, ♂, ♀; Brischke, D. Ichn. d. Prov. W. u. E. Preus. 53, ♂.

This species has been taken by Dr. Capron in the neighbourhood of Shere.

*Tryphon bicornutus*, Holm.

Holm., Act. Holm. (1854), 76, 4; Holm., Mon. Try. Suec. 188, 7, ♂, ♀; Brischke, D. Ichn. d. Prov. W. u. E. Preus. 58, ♂, ♀.

I took three females of this distinct species in the neighbourhood of Norwich, in the autumn of last year. Dr. Capron has also taken it at Shere.

*Tryphon ephippium*, Holm.

Holm., Mon. Try. Suec. 190, 13, ♂, ♀; Brischke, D. Ichn. d. Prov. W. u. E. Preus. 58, ♂, ♀.



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*Monoblastus lævigatus*, Holm.

Holm., Act. Holm. (1854), 75, 4.

*? Tryphon extirpatorius*, Gr., I. E. 213, 139.

*Polyblastus lævigatus*, Holm., Mon. Try. Suec. 208, 1, ♂, ♀.

*Monoblastus lævigatus*, Holm., l. c. 385, 1, ♂, ♀; Brischke, D. Ichn. d. Prov. W. u. E. Preus. 61, ♂.

Entom. xiii. 54.

*Eumesius egregius*, Holm.

Holm., Mon. Try. Suec. 201, 2, ♂, ♀; Voll., Pinac. pl. 33, fig. 8.

Entom. xiii. 87 (Dr. Capron).

*Exochus tibialis*, Holm.

Holm., Mon. Try. Suec. 317, 22, ♂, ♀; Holm., Disp. Meth. Exoch. Scand. 76, 29; Brischke, D. Ichn. d. Prov. W. u. E. Preus. 74, ♀.

Entom. xiii. 257 (E. A. Fitch).

*Chorinæus flavipes*, n. s. (Pl. VIII. fig. 15).

Niger, tibiis flavis, tarsis, et femoribus anterioribus maxima ex parte fulvis.

Very like *C. cristator*, but the thorax is shining, the punctures are more scattered, and much less deeply impressed; the abdomen is rather more coarsely punctured, and the central keels on the first three segments more prominent.

Black; the tibiæ honey-yellow; greater part of front femora, and all the tarsi, fulvous.

One female taken in the neighbourhood of Norwich, August, 1878.

*Chorinæus asper*, Gr.

Grav., I. E. i. 694.

*? Var.* Legs piceous.

I have taken two specimens, male and female, of an insect, which I believe to be a variety of this; they agree exactly with Gravenhorst's description, except in the colour of the legs. They were taken—the male at the end of April, the female the beginning of May, 1880.

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*Orthocentrus corrugator*, Holm.

Holm., Mon. Try. Suec. 329, 8, ♂.

Entom. xiv. 92.

PIMPLIDÆ.

*Pimpla diluta*, Ratz.

? Ratz., d. Ichn. d. Forst. iii. 102, 37, ♀; Holm., Mon. Pimp. Suec. 28, 23, ♀.

Of this species Holmgren describes the male only. I have taken two or three females at Brundall, and within three or four yards of the same spot some males, which I believe to be undescribed, but so exactly like *diluta* female in colour that it can, I think, be no other than the male of that species. The only difference to be found in Holmgren's description is in the length of the abdominal segments; the seven first segments are elongate, not transverse; the abdomen is nearly three times longer than the head and thorax; the 2nd segment is nearly twice as long as wide; and it differs also in having the abdomen very glabrous, and with no punctures. In the female the abdomen is thickly punctured. It would almost appear that the male is a *Theronia* and the female a *Pimpla*, thus uniting the two genera. I thought at one time it might be a variety of *Theronia*, but such is not the case. Mr. E. A. Fitch kindly sent me *Theronia* from Kaltenbach's collection, and they are very different. In the hind wing of *Theronia* the transverse anal nervure is placed behind the brachial fork, and divided distinctly above the middle, whilst the male and female *P. diluta* have it opposite the brachial fork, and divided almost in the middle, or a trifle below. The head, also, in the six or seven males I have taken is black, and not pale; neither have I seen any yellow on the scutellum.

*Pimpla abdominalis*, Gr.

Grav., I. E. iii. 150, ♀; Brischke, D. Ichn. d. Prov. W. u. E. Preus. 7, ♀.

Dr. Capron captured three males and two females of this very distinct species in the neighbourhood of Shere, Surrey, last year. It is unnoticed by most authors, and Gravenhorst only described the female. The male only differs in having a few black spots on the middle

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segments of the abdomen; the first segment is black, as in the female. The metathorax being so distinctly and regularly areolated, and its body being short and ovate rather than linear, this species probably should be placed in a genus distinct from *Pimpla*.

*Pimpla detrita*, Holm.

Holm., Mon. Pimp. Suec. 23, 11, ♂, ♀; ? Brischke, D. Ichn. d. W. u. E. Preus. 5.

A *Pimpla*, which I believe to be this species, appears to be not uncommon in this neighbourhood.

*Pimpla mandibularis*, Gr.

Grav., I. E. iii. 180, 90; Holm., Mon. Pimp. Suec. 27, 21, ♂, ♀; Thoms., Opusc. Entom., fasc. viii. 750, 13; Brischke, D. Ichn. d. Prov. W. u. E. Preus. 6, ♂, ♀.

Entom. xiii. 55.

*Lissonota leucogona*, Gr.

Grav., I. E. iii. 100, 55, ♀.

Thorax finely punctured, supero-medial area represented by a deep elongated depression; 1st three segments of abdomen strongly punctured, the 1st most so, the others gradually diminishing in coarseness, the apical margins smooth and shining; 1st segment with a groove running to just beyond the centre, a transverse depression before the apex; 3rd and 4th segments quadrate; transverse anal nervure divided well below the centre; aculeus nearly as long as the abdomen; two obscure triangular yellow spots on the front part of the mesothorax: these points are not noticed by Gravenhorst.

Taken at Guestling, near Hastings, in September, 1880, by the Rev. E. N. Bloomfield.

*Lissonota caligata*, Gr.

*Lissonota caligata*, Grav., I. E. iii. 38, 16, ♂; Holm., Mon. Pimp. Suec. 52, 13, ♂, ♀; Thoms., Opusc. Entom., fasc. viii. 760, 3.

A female of this species has been bred by Mr. Bignell from *Anticlea badiata*.

It has also been taken and recorded by Dr. Capron (Entom. xiii. 88).



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## Explanation of Plate VIII.

Fig. 1. *Herpestomus* ***striatus*****, male.**
2. ,, ,, **female.**
3. *Dicœlotus* ***Cameroni*****.**
4. *Phœogenes* ***similis*****.**
5. ,, ***formosus*****.**
6. *Phygadeuon* ***fumator*****, var.**
7. ,, ,, **var. with abbreviated wings.**
7*a*. Wings of ditto.
8. *Phygadeuon* ***fumator*****, var.**
9. ,, ***tarsatus*****.**
9*a*. Wings of ditto.
10. *Cryptus* ***antennatus*****.**
10*a*. Wings of ditto.
11. *Mesochorus* ***aciculatus*****.**
12. *Mesoleius* ***Bignellii*****.**
13. *Limneria* ***Fitchii*****.**
14. ,, ***Barrettii*****.**
15. *Chorinæus* ***flavipes*****.**

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XI. *Note on the Capture of the Paired Sexes of* Papilio Cenea, *Stoll.* (P. Merope, *auct.*), in Natal. By Roland Trimen, F.L.S., &c., Curator of the South-African Museum.

[Read May 4th, 1881.]

Plate IX.

I have the pleasure of laying before the Entomological Society some important additional evidence as to the sexes of the polymorphic *Papilio Cenea*, Stoll. (*P. Merope*, auct.), communicated to me by Colonel James Henry Bowker, F.Z.S., a practical naturalist and most accurate observer, who has collected and studied in the field throughout South Africa for many years, and has given special attention to Lepidoptera since the year 1861.

The species-identity of the pale-yellow tailed *P. Merope*, auct., and the tailless sombre-tinted *P. Cenea*, *P. Trophonius*, *P. Hippocoon*, and sundry unnamed varieties besides,—indicated by me, in 1868, as in the highest degree probable,*—was proved by Mr. J. P. Mansel Weale in 1873;† and his interesting paper describing the habits of the butterfly, and giving details of his rearing all the four forms from the ova, was published by the Society in 1874, together with a memoir of my own on the whole case.

Hitherto, however, although several observers had noted the tailed male in pursuit of the tailless female, so dusky and so unlike himself, there has been no record of the actual pairing of the sexes. This lacking evidence has now been supplied by Colonel Bowker, who has forwarded to me the male and female specimens which I exhibit, with the intelligence that he captured them *paired* in the park at D'Urban, Port Natal, on the 22nd February last.

It will be noted that these specimens are respectively of the forms most prevalent in Natal, *viz.*, the male

* Trans. Linn. Soc., vol. xxvi., pp. 506—511 (1869).
† Trans. Ent. Soc., 1874, pp. 131—136.



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presenting the broad, black, hind-marginal border (irregularly dentate interiorly) of the fore wings and the continuous black discal bar of the hind wings, and the female having the spots of the fore wings white (except the largest one, which is faintly tinged with yellow).

Colonel Bowker writes that, on the day mentioned, this remarkable *Papilio* was very numerous in the park at D'Urban, and that he saw all the three marked forms of the female, as well as some intermediate variations. He observes:—"I watched them for some little time, and at length saw a pair *in copulâ* rise out of the weeds and fly slowly along, settling every now and then at short distances. I observed this couple very narrowly, and noticed that the male (*Merope*) settled uppermost, and in flight carried the female (*Cenea*), the latter keeping her wings closed. Though I witnessed several other cases of very serious flirtation between the sexes, I had to be satisfied with this single instance of a clear and unquestionable match; and it was really with much satisfaction that I put my net over the pair."

In a subsequent letter, dated March 10th, Colonel Bowker says:—"Both sexes of *P. Cenea* are common about D'Urban now, and I have been watching their habits. The female settles in some quiet secluded hollow among the weeds and undergrowth, and will remain there for hours; the male meanwhile taking long circles on the wing (sometimes extending to 100 yards from the spot), but always returning, and, in passing, making two or three dips with half-closed wings towards the female, whom he sometimes even touches. On the approach of the male in this manner the female opens her wings and keeps up a fluttering motion, until the male is off for another round, and afterwards returns to renew the acquaintance. I noticed that the same male with a broken wing returned many times to the female I was watching."

These observations quite agree with those published by Mr. Weale in the paper above mentioned, and also with what I have myself noticed in various parts of South Africa; but only on one occasion was I favoured with a view of the male in actual pursuit of a female, while Mr. Weale mentions that he had witnessed this several times, and once saw no fewer than four males busily courting the same female.

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XII. *Descriptions of new Genera and Species* of Heterocerous Lepidoptera *from Japan.** By Arthur G. Butler, F.L.S., F.Z.S., &c.

[Read May 4th, 1881.]

## NOCTUITES.

### CYMATOPHORIDÆ.

44. *Gonophora aurorina*, n. s.

Allied to *G. scripta* of North America, from which it differs in its smaller size, darker coloration, the distinct pink gloss on the upper surface of the primaries, the more contracted basal area of these wings, due to the inangulation of the inner white border of the central belt; the anal area is occupied by a large grey rounded spot, shading into rust-red along its inner border, which is bounded by a curved white stripe (the outer limit of the central belt); above this spot are the ordinary black, crinkled, discal lines, which are four in number, parallel as usual, wider apart, much less deeply and less acutely zigzag or undated than in *G. scripta*, and terminate at the first median branch instead of running through the central belt to inner margin; the abbreviated gravel-brown lines on the opposite side of the central belt are also wholly wanting in the Japanese species, but the costal border above the usual discoidal spot is much more obscured by transverse dusky stripes; the fringe of all the wings is golden brown tipped with white; the secondaries are shining fuliginous-brown, with the external third dusky; below the wings are similar in pattern to *G. scripta*, but the ground colour is shining greyish brown instead of sordid creamy whitish; expanse of wings, 1 inch 5 lines.

Yokohama (*H. Pryer*).

* Continued from p. 23, *ante*.



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45. *Thyatira pryeri*, n. s.

Closely allied to *T. pudens* of North America, but with the brown patch towards the base of costal area considerably more cuneiform, and the streak connecting it with the disc of the wing far more oblique; the inferior margin of the large white basal patch regularly biundated; the large white costal patch beyond it more sharply defined, not interrupted, carried backwards in a conical shape so as to completely obliterate the orbicular spot, its inferior margin curving down and almost obliterating the reniform spot; apical white patch less sharply defined, less excised in front; the anal patch, the diffused patch in front of it upon the inner margin, and the fringe bright rust-red, instead of ochraceous; the fringe spotted with brown; secondaries darker, more pinky in tint, the fringe rust-red tipped with whitish; tegulæ whity-brown instead of white; expanse of wings, 1 inch 11 lines.

Yokohama (*H. Pryer*).

As *Gonophora scripta* of Gosse and *Thyatira pudens* of Guénée are well-known species, I have not hesitated to give comparative descriptions of these two Japanese forms.

46. *Leptina grata*, n. s.

Primaries above pale olivaceous, with broad subcostal and interno-median pink streaks extending from the base almost to the middle; discoidal spots large, the so-called "orbicular" oblique and almost triangular, with yellowish olivaceous centre; the reniform pinky, and enclosing a B-shaped olivaceous marking; subbasal line very slender and inconspicuous, dark brown, zigzag; two oblique olive-brown dashes at base of costa before the commencement of the subbasal line; a brown irregular costal patch above and between the discoidal spots, beyond which and above the reniform spot the costal border is pinky white, spotted with olivaceous; discal line slender, arched, dentated, dark brown; inner margin purplish brown, excepting at the base, crossed in the centre by a very oblique (almost longitudinal) black-edged white line, and near the external angle by a transverse black-edged bisinuated white line; an arched diffused tapering brown streak from the costa just beyond the dentated discal line, and a submarginal purplish

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brown stripe followed by an externally black-edged white marginal line; fringe whity brown, spotted with greenish grey lunules; secondaries shining grey with brassy reflections; a spot at the end of the cell, an arched discal line, and a rather broad external border darker grey; a marginal series of lunate white spots; fringe creamy whitish; thorax olivaceous; head and collar brownish, the latter with white posterior border; abdomen grey, with the posterior margins of the segments whitish, and with blackish dorsal tufts; under surface shining whity brown, the wings suffused and irrorated with pale grey over the costal half; primaries with an indistinct dusky spot just before the middle of the costal margin, and another closing the cell; an angular blackish character bounding a white costal spot beyond the cell; costal area beyond this spot slightly rosy; secondaries with a blackish spot at the end of the cell, followed by an irregular discal arched series; apical area slightly rosy; anterior legs above dark brown, banded with whitish; expanse of wings, 1 inch 5 lines.

Tokei (*Fenton*).

LEUCANIIDÆ.

47. *Mythimna limbata*, n. s.

Nearly allied to *M. turca* of Europe, but the primaries paler, of a more clay-coloured tint, especially on the basal and external areas, which are less striated with darker lines than in *M. turca*; secondaries paler, greyer, with a broad external creamy buff-coloured diffused border along the external margin; wings below with the reddish suffusion less intense towards the costal margins, and not extending to the base; expanse of wings, 2 inches.

Tokei (*Fenton*).

48. *Nonagria innocens*, n. s.

Aspect and general coloration of *N. helmanni*, but more nearly allied to *N. fulva*; primaries above pale shining sandy brown, with a slightly darker streak immediately below the cell, and a second along the inner margin from the base to the external fourth; reniform spot indicated by two or three white dots on the disco-cellulars; a slender blackish marginal line; fringe

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and secondaries sericeous creamy white; thorax sandy brownish; abdomen paler sandy brown, sericeous; primaries below whitish towards the inner margin, without markings; secondaries with the costal border slightly sordid; body below sandy brownish; expanse of wings, 1 inch 3 lines.

Yokohama (*H. Pryer*).

GLOTTULIDÆ.

49. *Glottula sordida*, n. s.

Primaries dark bronzy brown, crossed by two ill-defined black lines, the first at just before the basal third, widely sinuated, the second at about external third angulated and dentate-sinuate; the costal border to the commencement of the second line marked with four black spots, beyond this line with alternate black and cream-coloured spots; fringe pale brown, traversed by a black line and tipped with black; secondaries shining greyish brown, with a very slender darker marginal line; fringe whitish, traversed by a smoky brown line, and tipped with the same colour; thorax reddish brown; abdomen greyish brown; under surface shining greyish brown, with bronzy reflections; fringe grey; primaries with an oblique blackish costal dash beyond the cell; secondaries with the reflections rather redder than in the primaries, a dusky spot at the end of the cell; expanse of wings, 1 inch 6 lines.

Yokohama (*H. Pryer*).

The primaries of this species are rather squarer than in the typical form, more like *G. atronitens* of Australia; but the neuration and other points of structure agree.

XYLOPHASIIDÆ.

50. *Xylophasia commixta*, n. s.

Nearest to *X. sodalis*; general aspect of *Agrotis ustulata*; primaries above dark purplish grey, with all the markings as in *X. rurea*, excepting the two triangular blackish patches on the external border, which are wanting; the base, costal border between the black spots, discoidal area from the orbicular stigma to the denticulate discal line, the discoidal spots, and the outer border of a discal series of unequal black hastate spots, sienna-red (varied

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with creamy buff at base and within the cell, where this colour edges the discoidal spots); secondaries shining pale brownish, with broad greyish brown external border; fringe with a slender basal yellowish line, a broad central dark brown stripe, and white tips; thorax dark grey; vertex of head and tips of palpi whitish; collar occupied in front by two large semicircular dull rose-red patches, and edged behind with pale grey; abdomen sericeous-grey, blackish towards the anus; anal fringe above tipped with testaceous; under surface pale bronzy brown; wings with a spot at the end of the cell, and a rather broad discal band, crossed by pale nervures, blackish brown, not very pronounced, but limited internally by a slender arched blackish line; a marginal series of black lunules; anterior tarsi black, banded with buff; expanse of wings, 1 inch 6 lines.

Male, Tokei (*Fenton*); female, Yokohama (*Jonas*).

The female I formerly believed to be a well-marked variety of *X. sodalis*, notwithstanding the very dissimilar character of the under surface.

Var. (analogous to *combusta* type of *X. rurea*): wings above sericeous pale laky brown, with the two usual dentated blackish lines and a purplish brown zigzag stripe between them; a widely bisinuated dusky-bordered pale line limiting the external border, which is greyish; orbicular spot oblique; two white dots immediately above it upon the subcostal vein; reniform spot varied with snow-white and black; several ill-defined zigzag lines upon the basal area; secondaries and under surface considerably paler than in the typical form; expanse of wings, 1 inch 8½ lines.

Tokei (*Fenton*).

Now that we possess both sexes of this species, as well as the usual variety, it is impossible to regard it as other than a well-defined distinct species.

51. *Xylomyges bella*, n. s.

General aspect and coloration of *X. conspicillaris* and *Apamea ophiogramma*; rather larger, with broader primaries; the basal third of the primaries, a broad internal border, and an oblique submarginal abbreviated band limiting the broad pale apical costal patch, white, flecked here and there with pale testaceous and grey; the apical



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costal patch is continued backwards, chiefly owing to the colour of the orbicular spot, which is large, oblique, and testaceous, enclosing an oblique 8-shaped brown character; the undulated white discal lines (which are ill-defined in *X. conspicillaris*) are sharply defined, the inner, black-edged line being also nearer to the outer line and abruptly terminating half-way across the interno-median interspace, where it meets a curved longitudinal black stripe bounding the margin of the internal white border, and running to the outer edge of the white basal area; marginal spots lunate, black, bordered internally with snow-white; fringe as usual; the secondaries differ in having a rather broad diffused brownish external border; the veins are sordid (not black), tipped with black and crossed by a discal series of black dots; the body differs in the browner colouring of the back of the collar, behind the black line; on the under surface the principal difference is in the browner and more uniform coloration of the primaries, and the less conspicuous discal series of black dots on the secondaries; expanse of wings, 1 inch 9 lines.

Yokohama (*H. Pryer*).

This species is sufficiently nearly allied to the European one to render a comparative description preferable to any other.

APAMEIDÆ.

52. *Thalpophila digna*, n. s.

Allied to *T. cytherea* of Europe, from which it differs as follows:—Primaries silvery grey, sericeous with black markings, the interno-median area blotched with black to the base; the subbasal black-edged whitish line obsolete, and the second line with no inner white border; the orbicular spot small, circular and sharply defined by a black edge, the "reniform" ill-defined, clouded with black, and confounded with the black costal dashes; discal line forming one slightly concave line from the subcostal vein to the third median branch, and thence trisinuate (the central sinus crossing the first median and interno-median interspaces) to inner margin, its inner (and not its outer) border being snow-white; submarginal whitish line squamose, less irregular, formed entirely of pure white scales; marginal black line replaced by black dots; secondaries sordid white,

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testaceous towards the base and abdominal border; external border browner and abruptly angulated at the third median branch; fringe narrow, white, with grey central line; thorax grey, with the collar, and edges of the tegulæ blackish; primaries below pale greyish brown with brassy reflections; a pale angulated stripe across the disc; secondaries white with sordid borders; two costal spots, a disco-cellular spot, and an abbreviated external border, dusky; a blackish spot at anal angle; body below greyish brown; expanse of wings, 1 inch 9 lines.

Yokohama (*H. Pryer*).

53. *Apamea nivalis*, n. s.

Primaries above snow-white, sericeous; markings as in *A. gemina*, excepting that they are of a paler cupreous-brown colour, and that the markings are absent from the interno-basal area; costal border cupreous-brown, crossed by numerous white-edged black dashes; secondaries shining creamy white, like tarnished silver; body above silvery white, the abdomen becoming slightly greyish towards the anal extremity; under surface shining creamy white; expanse of wings, 1 inch 2 lines.

Tokei (*Fenton*).

This pretty little species seems to be most nearly allied to *A. demissa* of Canada, with which it agrees in general pattern, the most prominent markings on the primaries being the large subquadrate patch crossing the outer half of the cell, and the bimaculated slightly dusky outer border; in size it agrees better with *A. modica* (= *Celæna subcedens*) of Trenton Falls; its natural position would probably be between these two forms.

54. *Perigea? argyrosticta*, n. s.

Allied to *P. hylea* of S. America; primaries above red-brown, with bright cupreous reflections; basal area varied with bright orange; an abbreviated elbowed whitish line across the centre of the basal area; the area between the subbasal line and the inner line of the central belt occupied on the costal border by a large unequally quadrate yellowish spot; ordinary lines very irregular, divergent above the first median branch, pink, with blackish edges; orbicular spot small, reddish orange

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with black margin; reniform unusually large, metallic-silver, enclosing a brownish C-shaped ochreous marking; a second (but small and oblique) metallic-silver spot crosses the interno-median interspace close to the inner line of the central belt upon the basal area; disc slightly clouded with rose-colour; external border limited internally by an irregularly zigzag whitish line; secondaries cupreous-brown, sericeous; thorax testaceous, the front of head, tegulæ, and posterior margin of metathorax reddish; abdomen pale shining grey-brown, with whitish posterior margins to the segments; under surface shining creamy whitish, the primaries slightly dusky in the centre, and with the costal border washed with reddish orange, but indistinctly; expanse of wings, 1 inch.

Tokei (*Fenton*).

NOCTUIDÆ.

55. *Agrotis tokionis*, n. s.

Allied to *A. saucia*, with the same broad primaries, but in the general colour and pattern of these wings it more nearly resembles *A. suffusa*; primaries sandy brown; the discoidal cell, including the ordinary spots, slaty grey; orbicular spot diamond-shaped, imperfectly defined by a black margin; reniform angulated, with a black margin, which is wide below the angulation, but narrow above it; submedian spot fusiform, slaty grey, with black margin; the ordinary double zigzag lines all ill-defined; costal border dark brown, interrupted by the subbasal line, the inner line of the central belt, and a transverse dash above the reniform spot; outer border irregularly dark brown, limited internally by a series of lunate spots slightly paler than the ground-colour; a marginal series of black dots; fringe testaceous, with dusky outer edge; secondaries bronzy brown, sericeous, with a rather broad darker external border; a blackish marginal line; fringe as in primaries; thorax sandy brown, slightly tinted with pink; collar crossed in the centre by a bisinuated black line, behind which it is grey; tegulæ sparsely speckled with black scales; abdomen whity brown; primaries below fuliginous-brown, sericeous, with testaceous fringe; secondaries sericeous whity brown, with the costal border towards apex and the external border fuliginous-brown, diffused; fringe

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slightly yellower than the ground colour of the wings; body below fuliginous-brown, the spines of the hind tibiæ varied with testaceous; expanse of wings, 1 inch 11 lines.

Tokei (*Fenton*).

A rubbed specimen of this species was also obtained at Yokohama by Mr. Jonas, and was confounded with specimens of *A. ingrata*.

56. *Agrotis fucosa*, n. s.

Nearly allied to *A. segetum*; primaries with the same colour and pattern, excepting that they are slightly shot with lilacine, and that the outer or discal dentate-sinuate line is extremely indistinct; size, form, and coloration of secondaries as in *A. saucia*; expanse of wings, 2 inches.

Tokei (*Fenton*).

57. *Spælotis lucens*, n. s.

Closely allied to *S. senna* of Europe, from which it differs in its greater size, distinctly broader primaries, in the greater size of the reniform spot, and paler tegulæ; expanse of wings, 1 inch 8 lines.

Tokei (*Fenton*).

58. *Opigena arenosa*, n. s.

Pale sandy yellowish brown; primaries with the same pattern as in *A. polygona* of Europe, excepting that the discoidal spots are black with black-edged whitish margins; secondaries rather greyer than the primaries, with pale sandy yellowish fringe; wings below whitish, the primaries with dusky diffused discoidal area; two indistinct darker parallel discal lines and an indistinct darker disco-cellular lunule; a marginal series of black dots; secondaries very slightly pearly, excepting towards the costa, where they are sparsely sprinkled with blackish scales; two parallel externo-discal grey lines; a disco-cellular blackish lunule; a series of scarcely distinguishable linear blackish marginal dots; body pale sandy brown; expanse of wings, 1 inch 7 lines.

Tokei (*Fenton*).

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A shattered specimen in the collection has the under surface of the wings much darker and browner than in the type; the genus *Hermonassa* will have to be united to *Opigena*.

59. *Ochropleura plumbata*, n. s.

Allied to *O. stupens*; primaries above with the subbasal area and disc shining leaden grey; the base, central area, and external border washed with chocolate-brown; two black spots in the form of a semicolon, and limited externally by a whitish 3-shaped line close to the base; a black dot near the base of the cell, the interno-median interspace, between the 3-shaped marking and the inner line of the central area, blackish; inner line whitish, black-edged, acutely angulated on the costal border and close to the inner margin, and widely arched in the centre; discoidal cell between this line and the reniform spot, black, but interrupted by the orbicular spot; both discoidal spots chocolate-brown, with whitish centres and edges; the reniform spot limited externally by a dotted 3-shaped black line; an irregular blackish spot touching the median vein below the orbicular spot; outer line of the central area indicated by two slender parallel dentate-sinuate blackish lines, between which and the externo-discal line (which limits the external border) the veins are alternately black and white; the line just mentioned is ill-defined, but bounded internally by an irregular series of unequal hastate black spots; a marginal series of blackish lunules; fringe testaceous, with a pale basal line; secondaries greyish brown, with slight bronzy reflections; the veins and a straight belt from apex to anal angle grey; external border, between the extremities of the belt, sandy brown; fringe sandy whitish, intersected by a grey line; thorax laky brown; head greyish; a white line across the collar; dorsal tufts four in number, whity brown; abdomen grey, with yellowish anal extremity; under surface of wings grey, with bronzy reflections; external borders pale sandy brown; a well-defined blackish stripe just beyond the middle, straight on the primaries, arched on the secondaries; pectus greyish, reddish in front; venter pale sandy brown; expanse of wings, 1 inch 10 lines.

Tokei (*Fenton*); Yokohama (*H. Pryer*).

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This species has somewhat the facies of *Semiophora gothica*, but the antennæ of the male are simple.

ORTHOSIIDÆ.

60. *Cerastis lævis*, n. s.

Primaries above dark silky chocolate-brown, varied by velvety brown lines and spots, the whole of the dentate-sinuate lines across these wings arranged as in *C. erythrocephala* of Europe, those which bound the central area on each side being formed of rather more widely separated parallel double lines; external border shining dark ash-grey almost to apex, and with a pale internal limiting line; its apical portion testaceous; costal border crossed by numerous parallel oblique velvety brown dashes; marked beyond the middle by four equidistant white dots; orbicular spot outlined in brown, below it and touching the median vein and the inner limit of the central area is a rather large velvety-brown spot; reniform spot duplicated, the inner spot being merely outlined in brown, the outer one almost lunate in form, and straw-yellow; nervures on the disc dotted with black; fringe greyish, with central and basal undulated brownish paler lines; secondaries whity brown, sericeous, greyish in certain lights; costal border whitish, silvery at base; a diffused greyish external border; fringe traversed by two grey lines, and tipped with silvery white; thorax chocolate-brown; abdomen whity brown; wings below pale shining pinky brown, crossed by an irregular grey discal line and irrorated with grey towards the costal margins; primaries with the central area broadly greyish, the internal border whitish, with brassy reflections; body below pinky brown; expanse of wings, 1 inch 9 lines.

Tokei (*Fenton*).

61. *Cerastis subdolens*, n. s.

Nearly allied to *C. erythrocephala*, but larger, less sericeous, varying in the colour of the primaries and thorax from laky brown to pale sandy flesh-tint, whereas the European species varies from shining chocolate-brown and grey to reddish clay-coloured; the reniform spot larger and paler, sometimes almost entirely yellowish white; there is also invariably a small submedian black

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dot below the orbicular spot; the secondaries are slightly darker along the external border, and have a decidedly narrower fringe; on the under surface the external pale border is diffused and decidedly wider at apex, the dark discal line is indistinct, and the costal border is noticeably redder; the secondaries are considerably whiter, with redder costal border; the discal line is placed much farther from the outer margin, and the spot at the end of the cell is much smaller; the body below is darker and redder; expanse of wings, 1 inch 7½ to 9 lines.

Tokei (*Fenton*).

This does not appear to be a rare species.

62. *Mesogona exigua*, n. s.

Coloration of primaries nearly as in *M. acetosellæ*; sandy testaceous, faintly washed with pink, and slightly sericeous; the two lines of the central belt dusky, the inner line oblique, with pale internal border, the outer line transverse from inner margin to upper radial, whence it runs obliquely at an obtuse angle inwards to costa, with pale external border; between these two lines is a somewhat diffused dusky angular stripe, the angle of which runs into the lower part of the reniform spot; both discoidal spots ill-defined, but rather paler than the ground colour; external border greyish, limited internally by a rather pale bracket-shaped line; a marginal series of black dots; fringe dark grey with pink reflections, and with a bright clay-coloured basal line; secondaries greyish brown, sericeous, with bronzy reflections; external border rather broadly grey, but this border is concealed in certain lights by the bright reflections; costal border whitish, shining, with brassy reflections; fringe ochreous, traversed by a grey line; thorax clay-coloured washed with pink; abdomen shining grey, with testaceous anal tuft; under surface whitish; wings shining, slightly ochraceous along the costal and apical borders, irrorated with grey, and crossed by a dark grey discal line; primaries with the whole central area grey; legs and venter slightly tinted with pink; expanse of wings, 1 inch 3 lines.

Tokei (*Fenton*).

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HADENIDÆ.

63. *Lamprosticta bella*, n. s.

Primaries above chalky greenish white, irregularly spotted and streaked with black, brown and grey, so as to give it somewhat the aspect of *Dianthæcia conspersa* and *Diphtera deridens*; the form of the wings, however, agrees with *Lamprosticta*; basal third white, with three black costal spots, the third of which is the commencement of the inner edge of the central belt; a black spot near the base of the cell, connected with the second costal spot by a curved brown dash; a curved subbasal black marking just below the cell; a reniform black-edged spot placed obliquely below the latter, and united externally to a whitish-centred brown spot; base of inner border brown; central third best described as black, crossed obliquely by a broad and irregularly notched greenish white band, which includes the orbicular spot, a black linear dot in the latter, and a second on the costa above it, a bluish black and very slender linear dot below it; reniform spot transverse, quadrate; the interval between the orbicular and reniform spots occupied by a black-edged brown spot; costa from the reniform spot to apex alternately white and black; a triangular black costal spot just beyond the central belt, below which is a transverse discal streak of purplish grey and brown, interrupted on the interno-median interspace, and partly edged externally by an uneven curved black line, which runs to the external angle; two very irregular submarginal black spots, one crossing the radial interspaces and the other divided by the first median branch; fringe spotted with brown and traversed by a slightly darker line; secondaries shining dark bronzy brown; fringe snow-white, traversed, excepting towards the anal angle, by a brown line; thorax creamy white; the palpi (excepting the last joint), eyes, antennæ, two longitudinal dashes on the head, back of collar, and borders of tegulæ, black; abdomen dark greyish brown, pale towards the base; primaries below cupreous-brown, with dark greyish brown costal border, spotted beyond the cell with white; fringe alternately black and white, traversed near the base by a dark brown line; secondaries with greyish brown costal area, otherwise whitish with bronzy reflections; a distinct obtusely angulated discal



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stripe and an indistinct submarginal stripe brown; fringe as above; body below dark smoky grey, the legs black, banded with white; anterior tibiæ with white lateral fringe; expanse of wings, 1 inch 3 lines.

Tokei (*Fenton*).

64. *Miselia cinerea*, n. s.

Primaries above grey, rather dark, with the black lines, edges of discoidal spots, and oblique costal dashes as in *M. bimaculosa* of Europe; the discoidal spots very large and slightly tinted with brown; the outer line of the central belt rather broadly bordered with snow-white upon the interno-median interspace; this portion of the wing clouded throughout with blackish; basal third of inner border whitish; a diffused whitish nebulous streak from near the apex to the commencement of the white border of the exterior line; external border limited internally by an indistinct brown-edged whitish dentate-sinuate line; a sinuated black marginal line; fringe dark grey, traversed by a darker stripe; secondaries greyish white, with a darker diffused external border and discal line; fringe with a pale basal line; thorax dark grey speckled with black, a black line across the head; abdomen rather paler than the thorax; under surface greyish white; wings sericeous; the markings of the upper surface indistinctly visible in certain lights, owing to the partial transparency of the wing; pectus sordid white; expanse of wings, 1 inch 11 lines.

Yokohama (*H. Pryer*).

65. *Plataplecta plumbea*, n. s.

Primaries above shining leaden grey, slightly brassy towards the internal border, and rosy brownish on the external border; costal area and veins irrorated with white scales; a basi-costal irregular black spot followed by an interrupted irregular blackish stripe; the dentated black lines bounding the central area and the external border similar to those of *Aplecta herbida*; discoidal spots small, white, with black margins; a discal series of white spots on the nervures; a marginal series of depressed white-edged black spots; fringe brown, spotted with white; secondaries greyish brown, with bronzy reflections; a nearly marginal slender whitish sinuated

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line; fringe white, spotted with brown; thorax greyish white; tegulæ transversely banded with blackish; abdomen shining grey, with faint brownish reflections; wings below with the basal area broadly whity brown, shining with faint golden reflections; primaries with the external three-fifths, excepting part of the costal border, an elongated spot beyond the cell, a spot at external angle, and a streak on the interno-median interspace, greyish, with faint golden reflections; an interrupted marginal blackish line; fringe dark grey, spotted with white; secondaries with the external third, excepting towards anal angle, greyish brown, with faint golden reflections, limited internally by an irregularly dentate-sinuate dark grey line; a small blackish spot at the end of the cell, and above it a greyish squamose spot; body below sordid white; legs banded with grey; expanse of wings, 1 inch 10 lines.

Tokei (*Fenton*).

66. *Aplectoides caliginea*, n. s.

Primaries above shining slaty grey, crossed by brownish bordered velvety black lines, similar to those of *A. nitida*; external border pale brown, with a submarginal series of black spots across it; orbicular and reniform spots as in *A. nitida*; a similar pale patch immediately beyond the reniform spot, but brownish, as in the dark variety of that species; costal margin at apex and fringe pale rust-red, the latter spotted below the middle with grey; secondaries paler, and with more golden reflections than in *A. nitida*, otherwise similar; thorax grey, barred with black; abdomen pale brown, with dorsal black spots at the base; anal segment dark grey, with a basal black band; under surface greyer than in *A. nitida*, but otherwise similar; expanse of wings, 1 inch 7—8 lines.

Tokei (*Fenton*).

This species is wonderfully similar to the scarce melanistic form of the much larger *A. nitida* (Ill. Typ. Lep. Het. 3, pl. xlv. fig. 1); it is, however, clearly a perfectly distinct species.

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67. *Hadena tokiensis*, n. s.

Primaries above slaty grey, with the base, orbicular spot, the reniform spot excepting its posterior angle, and a very irregular waved and sinuated submarginal stripe limiting the external border, pale sap-green; two or three black dots at the base; central belt greenish, with black dentate-sinuate marginal lines, and enclosing a large spot somewhat similar in form to the white spot of *H. lucia* (Ill. Typ. Lep. Het. 3, pl. xlv. fig. 2), but lilacine slate-colour instead of pure white; orbicular spot small, rounded, with black pupil and margin; reniform angular, enclosing a curved olivaceous line, and with black margin; external border with large internal and small marginal black spots, the latter bordered with whitish; fringe grey, spotted with white; secondaries silvery white, irrorated with grey scales; a discal line and a diffused submarginal belt grey; thorax greenish yellow, varied with brown bars; abdomen whitish, banded with grey; under surface sordid whitish; wings shining; primaries with the central area greyish; secondaries with a black spot at the end of the cell; a dentate-sinuate grey discal line, and an ill-defined submarginal greyish streak; anterior tarsi black, spotted with white; expanse of wings, 1 inch 9 lines.

Tokei (*Fenton*).

HELIOTHIDÆ.

68. *Heliothis fervens*, n. s.

Primaries above dull dark ferruginous-red, washed with lake, excepting at the base of the inner margin; spotted with black at the base, and with a broad belt of blackish scales just before the middle; a slightly sinuous submarginal chocolate-brown stripe; fringe cream-coloured; secondaries dark purplish brown, almost black, with a central small white spot; fringe tipped with white; thorax ferruginous; abdomen blackish brown, with narrow pale yellow hind margins to the segments; anal tuft ferruginous; primaries below black, two spots in the cell and one just beyond it creamy white, costal border and apex ferruginous; outer border cupreous-brown; internal area shining grey; fringe pale greyish buff, sericeous, tipped with ochreous and white; secondaries with the costal third ferruginous, the

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discoidal area white; a black spot in the cell and a large reniform black spot at the end of the cell; anal two-thirds of external border broadly black; fringe white, traversed by a grey line; pectus sordid white; anterior tibiæ ferruginous, tarsi brown; posterior tibiæ pinky whitish; venter flesh-coloured, banded with grey; anus ferruginous; expanse of wings, 1 inch 3 lines.

Tokei (*Fenton*).

ACONTIIDÆ.

69. *Leocyma nervosa*, n. s.

Shining silvery white; primaries above with the nervures pale bronzy brown; antennæ brown; a smooth shining black dash on each side of the thorax behind the tegulæ; primaries below pale golden brown; the internal area and a streak in the cell white; secondaries and body silvery white; legs opaline*; proboscis orange-yellow; expanse of wings, 1 inch and ½ line.

Tokei (*Fenton*).

The genus *Chasmina* of Walker, placed by that author in the *Leucaniidæ*, will have to sink as a synonym of *Leocyma*; so that my opinion that *Chasmina* would prove to be more nearly allied to the *Acontiidæ* (see P. Z. S. 1880, p. 675, note) has been fully borne out; the species above described comes nearest to *L. albonitens* of Bremer, which also occurs at Tokei; but may readily be separated by its brown veins, smaller size, and rather different neuration; the subcostal branches and the second and third median branches of the secondaries being emitted from distinctly longer footstalks; this character does not appear in the present instance to be a generic one, as it increases gradually as the species diminish in size; thus *L. dianæ* (*glabra*, Wlk.), has hardly a trace of either footstalk; *L. cygnus* has a short subcostal footstalk; *L. albonitens* has a decidedly longer subcostal one, but no median one worth the name (the branches, as in the two preceding species, are closely approximated at their bases); finally *L. nervosa* has a long subcostal and a short median footstalk.

* The tarsi are brownish, but this appears to be due to rubbing.

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70. *Dyrzela cara*, n. s.

Primaries above sericeous sandy brown, washed with pink; an abbreviated subbasal pink stripe followed at basal third by an oblique pink stripe, margined externally with dark brown; a very large chocolate-coloured triangular patch, with rounded posterior margin, from the cell to the centre of the disc on the costal half of the wing, divided by the discal stripe, which is nearly straight, pink, and with black inner edge from the inner margin to the upper radial vein, where it is abruptly angulated and curved inwards across the chocolate-coloured patch to costal margin; this part of the stripe is snow-white; a subapical oval black spot, with a black dot both above and below it; fringe speckled with greyish; secondaries grey, sericeous, with bronzy reflections; fringe testaceous at base, traversed by a brown line, white externally, washed at apex with pink; thorax testaceous, washed with pink; abdomen pale greyish, with slight bronzy reflections; primaries below with the discoidal area grey, with slight golden bronze reflections, the discal stripe of the upper surface limiting the grey area, but not distinctly indicated, excepting by a white costal spot; the disc beyond the grey area pale golden brown; costal border, outer margin, and fringe rosy; secondaries whitish, with slight golden reflections, apical area rosy; a dot at the end of the cell and an arched discal line dark grey; body below white, slightly pink in the centre; legs opaline; expanse of wings, 1 inch 1 line.

Tokei (*Fenton*).

Nearest to *D. plagiata* of India.

ERASTRIIDÆ.

71. *Erastria atrata*, n. s.

Allied to *E. fuscula*; primaries above dull black, becoming brownish towards the outer margin, crossed at basal third by a velvet-black oblique zigzag line; orbicular spot obsolete; reniform mottled with white, and confounded with a white-mottled costal spot, with which it makes a large triangular patch, interrupted on the costal margin by two small black spots, and in the reniform spot by a black >-shaped marking; a very irregular velvet-black dentated discal line, edged with

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white at inner margin; a small bisinuated subapical costal white line; outer border rather narrow, slightly cupreous, limited within by a subconfluent series of sagittate spots; a marginal series of black lunate spots followed by a whitish line at the base of the fringe, the latter dark greyish brown, traversed by a darker central line; secondaries sericeous greyish brown; fringe pale, with a dark line near its base; thorax dull black; abdomen greyish brown; under surface sericeous, pale greyish brown, the costal borders mottled with whity brown and white; expanse of wings, 1 inch to 1 inch 1 line.

Tokei (*Fenton*); Yokohama (*H. Pryer*).

Mr. Moore referred me to the genus *Prospalta* of Walker for this species, and I have no doubt that he was right in so doing, but I cannot regard it as distinct from *Erastria*.

72. *Erastria senex*, n. s.

Primaries above silvery white; a large C-shaped dark brown streak at the base, its centre filled in with pale brassy yellowish; an irregular band just before the middle, widely interrupted in the centre, so as to leave only two large spots well defined, dull testaceous, flecked with black-brown; an obtusely angulated brassy yellowish discal band from costal to inner margin, and a rather narrow external border of the same colour: a subapical costal black spot, a grey spot at apex, a black dot near the outer margin on the second median interspace; fringe white tipped with black, a black spot upon it at the apex, two opposite to the median interspaces, and one at external angle; secondaries sericeous, grey, the apical half, excepting a white basal line, grey, the anal half white; head and prothorax pale buff, bordered with black, the remainder of thorax white; abdomen with the basal half white, the anal half pale buff; a dorsal series of black spots; primaries below sericeous grey, with one or two darker costal dashes; inner border whitish; fringe as above; secondaries sericeous creamy white, the costal border and discoidal cell irrorated with grey; a grey discal angulated line; an angular discocellular black marking; body below white; legs banded with dark grey; expanse of wings, 1 inch 1 line.

Tokei (*Fenton*).

Nearest to *E. albidula* of North America.

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73. *Erastria fentoni*, n. s.

Pale bronze-brown; wings shining; primaries crossed just beyond the middle by an irregular transverse white stripe, immediately followed by a bright ochreous band which encloses a semicircular black-edged snow-white spot at the inferior extremity of the cell; costal border towards apex creamy yellowish; a slightly sinuous submarginal stripe, white on the costal border, otherwise whity brown; head and collar yellowish; under surface whity brown; wings shining; primaries with the basal half grey; secondaries irrorated with grey scales; expanse of wings, 1 inch 1 line.

Tokei (*Fenton*).

ANTHOPHILIDÆ.

74. *Acantholipes metalligera*, n. s.

Flesh-coloured, densely irrorated with dark leaden grey, which is metallic along the costal border; the veins clear, not irrorated with grey; a zigzag submarginal white line bounding a series of oval shining plumbageous spots, between which the veins are rust-red; a marginal series of black dots followed by a white line; fringe brown, traversed by two lines of black atoms; primaries crossed by two white lines representing the limits of the central belt; secondaries crossed beyond the middle by a single white line; antennæ dull sordid white; under surface of wings silvery grey, a spot at the end of each cell, a discal line, and the fringe dusky; internal borders white, shining; body below whity brown; expanse of wings, 9½ lines.

Tokei (*Fenton*).

Not nearly allied to any species with which I am acquainted.

PLUSIIDÆ.

75. *Plusia metabractea*, n. s.

Nearly allied to *P. bractea* of Europe, from which it chiefly differs in the smaller oblique metallic tin-like spot on the primaries, the form of which is like a bent human thumb, truncated at the base, and with the joint turned towards the inner margin; in *P. bractea* it is altogether shorter, broader, and more quadrate; the secondaries also have a much narrower and diffused

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dusky external border; expanse of wings, 1 inch 10 lines.

Tokei (*Fenton*).

HYBLÆIDÆ.

76. *Hyblæa fortissima*, n. s.

Allied to *H. puera*; primaries above similar, but darker; secondaries darker; the orange belt placed farther from the outer margin, much broader towards the costa; marginal orange border replaced by a submarginal series of five small orange spots between the first subcostal and the first median branches, and an elongated orange tapering patch across the interno-median area; fringe orange, with the anal area and a spot opposite to the first median interspace dark brown; body above blackish brown; the abdomen with slender yellow hind margins to the segments; under surface very different from *H. puera*; primaries orange, with reddish costal and outer borders; internal area pale; a large elongated spot near the base below the median vein, a second across the end of the cell, a small spot in the cell, two dots on the costal vein, and a curved discal band forking at its inferior extremity, black; fringe dark brown, with a white subapical spot; secondaries orange in the centre, with reddish orange borders; abdominal area broadly streaked with blackish; veins on the apical area dotted with black; a spot at the end of the cell, an arched interrupted irregular streak from second median branch to anal angle, and a slender line on the margin beyond it, black; fringe almost as above, but brighter in colour; palpi below white; pectus pale sordid yellow, the tarsi banded with brown; venter yellowish, the posterior segments obscurely banded with reddish, and flecked with black; anal tuft brown; expanse of wings, 1 inch 6 lines.

Tokei (*Fenton*).

TOXOCAMPIDÆ.

77. *Apopestes inconspicua*, n. s.

Most like *A. phantasma*, but not much larger than *Autophila dilucida* of Europe; primaries sericeous, whity brown, densely irrorated with dark grey, so that the general appearance is greenish grey; the dark irroration is less dense along the edges of the dentated lines, so that they will have a pale margin either on one



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side or the other; three irregularly dentated dark grey lines, the first oblique, at basal fourth, the second and third subparallel, transverse, dividing the disc into three nearly equal parts; a fourth almost obsolete between the first and second, part of which forms a blackish >-like marking on the disco-cellulars; a marginal series of black dots; costal border spotted with black; fringe whity brown; secondaries whity brown, slightly greyish, crossed by a central bisinuated grey stripe and a broad grey external border; thorax pale brown, speckled with black; abdomen whity brown; under surface whity brown; wings crossed just beyond the middle by a curved grey stripe, and near the outer margins by a grey band; a slender dark grey zigzag marginal line; primaries with an oblique costal blackish streak just before the middle, a second at the commencement of the post-median stripe and three small spots at the commencement of the discal band; body slightly yellower than the wings; anterior legs blackish above, the tarsi banded with whitish; expanse of wings, 1 inch 10 lines.

Tokei (*Fenton*); Yokohama (*H. Pryer*).

The specimen received from Mr. Pryer is rather darker than those from Tokei, and has blackish spots on the disco-cellulars below.

78. *Toxocampa vulcanea*, n. s.

Allied to *T. ludicra* of Europe, from which it may easily be distinguished by its much greater size, more lilacine primaries, and darker secondaries; the latter are bronze-brown, with a broad fuliginous-brown border and whity brown fringe; expanse of wings, 2 inches to 2 inches 2 lines.

Tokei (*Fenton*).

A specimen of this species, sent from Yokohama by Mr. H. Pryer, is paler even than ordinary examples of *T. ludicra*, but it is not in good condition, and appears to me to be much faded; its size is slightly superior to the Tokei specimens.

POLYDESMIDÆ.

79. *Pandesma virens*, n. s.

Near to *P. eurychlora* of India; primaries pale emerald-green, slightly irrorated with black, and crossed by

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darker dentate-sinuate lines partly bordered with white; an abbreviated irregular subbasal red-brown belt, almost divided in the cell by a streak of green speckled with black; orbicular and reniform spots outlined in white; a broad angulated and undulated discal red-brown belt, followed immediately by a marginal chain-like series of large subconfluent green spots with brown centres; the apex and two or three longitudinal streaks on the radial interspaces blackish; fringe dark brown spotted with whitish; secondaries greyish brown, with cupreous reflections; costal area towards base white, opaline; thorax green, banded with black and white; abdomen pale shining brown, with dusky dorsal tufts, and white hind margins to the segments; under surface sandy brown, with golden reflections; wings with black angulated disco-cellular markings; a dusky dentated line just beyond the cell, and a diffused greyish discal band; a slender black marginal line; fringe spotted with blackish; primaries with the interno-basal area opaline-white; tarsi black, banded with pale sandy yellow; expanse of wings, 1 inch 9 lines.

Tokei (*Fenton*).

*Dandaca eurychlora*, *D. biformis*, and *Felinia terminigera* must be referred to *Pandesma* of Guénée; *Dandaca senex*, on the other hand, belongs to the genus *Eliochræa* of Walker, which should be placed next to *Blenina* in the *Amphipyridæ*, whilst *Dandaca columba* will supersede the genus *Minica*, with which it agrees in structure.

HYPOGRAMMIDÆ.

80. *Gerbatha subfasciata*, n. s.

Primaries above sericeous leaden grey; base brownish; an angular dark grey line, indented in the middle, across the basal third, followed immediately by the central band, which is broad but constricted in the middle, its upper half outlined in chocolate-brown, and crossed by three oblique dark grey lines, which are washed, within the cell, with reddish cupreous; the subcentral portion of this band, from the second median branch to the middle of the interno-median interspace is reddish cupreous, and from this point to the inner margin dark chocolate-brown, edged with black; immediately beyond the central band is a widely bisinuated dark grey line; the orbicular spot is obsolete, and the reniform spot, which

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falls just within the central band, is feebly indicated by a C-shaped grey outline; an indistinct sinuated grey submarginal line; two widely separated dusky spots close to the outer margin, and a marginal series of black dots; fringe brownish, traversed by a dark grey line; secondaries greyish, changing to bronzy brown in certain lights; a dusky marginal line; fringe brownish, traversed by a dark grey line; thorax grey, with the posterior margin of the collar black; tegulæ more or less washed with rose-red; metathorax with central tes-taceous tufts; abdomen greyish white or pale greyish brown, dorsal tufts black and lake-brown; anal tuft dark brown; under surface whity brown; wings shining, with disco-cellular spots, a discal stripe, and an indistinct marginal series of dots, grey; expanse of wings, 1 inch 1 line.

Tokei (*Fenton*).

81. *Gerbatha granitalis*, n. s.

Primaries above granite-grey, crossed at basal sixth by an oblique zigzag black line; a bisinuated oblique black line at basal third, forming the inner limit of the central belt; the latter is oblique, dark grey, washed with red dish in the cell, its upper two-thirds diffused, only partly limited by an indistinct transverse quadrate "reniform" spot, its lower third limited externally by the discal line which is black and sigmoidal; an indistinct grey line parallel to and immediately beyond the discal line; external area and a discal nebula cupreous-brown; longitudinal black streak running inwards from the external angle almost to the discal line; a blackish marginal line; fringe slaty grey; secondaries pale shining brown; fringe with a whitish basal line; thorax granite-grey; abdomen greyish brown; under surface pale shining pinky brown; the secondaries with an indistinct darker disco-cellular spot and bisinuated discal line; fringe and under surface of body paler than the wings; expanse of wings, 1 inch 1 line.

Tokei (*Fenton*).

82. *Ercheia umbrosa*, n. s.

Nearest to *E. tenebrosaria* of the Andaman Islands but at once distinguishable by the entire absence of whi

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spots from the secondaries; primaries above shining dull purplish brown, the internal area, a large marginal spot on the second median interspace, and a small marginal subapical spot, sandy yellowish; two or three irregular spots and streaks of yellowish over and beyond the end of the cell; the black irregular lines abbreviated much as in *E. cyllaria* of Cramer; two or three discal longitudinal black lines towards the apex; a widely bisinuated submarginal white line towards the external angle; secondaries greyish brown, with bronzy reflections; basi-costal area opaline-white; a very irregular pale stripe just beyond the middle, and a second abbreviated stripe towards the anal angle; fringe sandy yellowish, spotted with greyish brown, and with creamy whitish towards apex; thorax sandy yellowish, with the sides of the collar and the tegulæ broadly streaked with dark brown; abdomen pearly grey; under surface nearly as in the allied species, and scarcely differing from *E tenebrosaria*; expanse of wings, 2 inches 5 lines.

Tokei (*Fenton*).

CATOCALIDÆ.

83. *Catocala omphale*, n. s.

Primaries above rich olive-brown; the base lilacine grey, crossed at costa by a biangulated black line; an oblique curved black band enclosing a pale brown stripe, limiting the central belt internally; the latter extending far into the disc, similar in form to that of *C. jonasii* (Ill. Typ. Lep. Het. ii., pl. xxxiii., fig. 6), but in colouring nearer to *C. ella*, the costal half being white internally, and brown varied with whitish externally, the median branches, radials, and longitudinal streaks on the radial interspaces black; lower half lilacine grey; orbicular spot obsolete; reniform white, with brown centre and black margins, and just below it a black-edged semicircular white spot; a diffused oblique blackish streak from the apex almost to the semicircular spot*; costal area immediately beyond the central belt speckled with white; a submarginal series of squamose whitish hastate spots, bounded internally by a slender zigzag blackish stripe; a marginal series of black-edged pure white dots; fringe speckled internally and spotted externally with white; secondaries purplish brown, almost black,

* On the left side this spot is exactly like an italic *D.*

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excepting towards the abdominal margin; a spot at the origin of the medial branches, and a rather slender angulated and externally dentated band beyond the cell orange; an ochreous marginal streak at apex; apical fringe white, remainder of fringe greyish brown, spotted with testaceous; thorax ash-grey, barred with black; abdomen olive-brown, the sides at base and the anal tuft grey; wings below sordid creamy whitish, an angulated black discal belt, and a broad internally angulated external blackish border; fringe spotted with blackish; primaries with a broad oblique subbasal belt, the area between the discal belt and the external border nearly pure white; a whitish diffused apical costal streak; secondaries with a dusky diffused brownish oblique bar across the abdominal area, and representing the subbasal belt of the primaries; apex greyish; body below woolly white; legs speckled with black; the tarsi black, banded with cream-colour; expanse of wings, 2 inches 8 lines.

Tokei (*Fenton*).

One of the most beautiful of the Eastern *Catocalæ*; it seems to be most nearly allied to *C. xarippe* of Hakodaté.

84. *Catocala connexa*, n. s.

Primaries almost exactly as in *C. esther* (Ill. Typ. Lep. Het. pt. ii., pl. xxxiii., fig. 9 (1878), but of an almost uniform ash-grey tint; secondaries nearly as in *C. paranympha* of Europe, excepting that the loop-like band from the base is carried down to the external belt, so that it leaves only a spot of the ground colour close to the margin on the interno-median area, where (in *C. paranympha*) the external belt is interrupted; the outer half of the loop-like band is also broader, and the centre of it of a duller yellow colour than in the European species; expanse of wings, 2 inches 2 lines.

Tokei (*Fenton*).

This species should stand between *C. paranympha* and *C. esther*.

85. *Catocala nubila*, n. s.

Nearest to *C. dotata* of India; primaries above granite-grey, slightly tinted with brown behind the black markings, which are as follows: a black spot with pale centre

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at the base of the costa; an irregular abbreviated belt from the costa at basal fourth, its centre traversed by an irregularly sinuated pale line; a second somewhat similar band from the centre of the costa to the origin of the second and third median branches; from these abbreviated bands two approximated undulated slender black lines run to the inner margin; two subparallel denticulated discal lines, the inner one abruptly angulated and duplicated towards the costa; a marginal series of black dots bordered externally with white; fringe brown, spotted with blackish; secondaries bright ochreous, the abdominal area pale dull pinky brown; an irregularly angulated unequal central belt and a rather broad marginal belt, sinuated internally, and interrupted at apex by a large ochreous spot, blackish chocolate; fringe spotted with blackish (excepting at apex) at the extremities of the veins; thorax pale grey, barred with black; abdomen pale brown, whitish at the sides; wings below straw-yellow, crossed by a central oblique externally angulated chocolate-brown band and a broad marginal belt, interrupted at apex by a large spot of the ground colour, primaries crossed near the base by a very oblique greyish brown belt; the external belt sharply angulated internally; secondaries pale towards the abdominal border; the external belt trisinuated internally as above; body below white; tarsi black, banded with pale yellow; expanse of wings, 2 inches 6 lines.

Tokei (*Fenton*).

HYPOPYRIDÆ.

86. *Spirama ægrota*, n. s.

Near to *S. martha**, but rather paler above, and with less prominent markings; the first and second lines on the primaries much nearer together, the third line hardly represented, excepting by the black dots on the nervures; the disc more pink in tint, the external area decidedly more greenish olive in colour, and the fringe much more rosy; the body paler and greyer; below, the differences are more decided; the whole ground colour is of a brilliant brick-red colour, not sordid as in *S. martha*; the first transverse dusky line of the primaries is barely distinguishable, and crosses the wing at the end of the cell, instead of at some distance beyond it, the other lines

* "*Hypopyra martha*" (Ill. Typ. Lep. Het. ii., pl. xxxiv., fig.8.)

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are more slender; the dusky external border is wholly wanting; the fringe is shining grey; expanse of wings—male, 2 inches 8 lines; female, 3 inches 3 lines.

Tokei (*Fenton*).

87. *Spirama simplicior*, n. s.

Near to *S. japonica*, *S. retorta*, and allies, but both sexes above with the typical female coloration, the male being only slightly darker than the female, and most noticeably so in having the basal half of the secondaries blackish brown; the principal differences between this species and female of *S. japonica* are in the smaller black spot at the extremity of the scroll-like line of the primaries, and in the almost straight instead of dentate-sinuate pale stripe beyond the dark discal belt of the secondaries; the ground colour is also of a more rosy flesh-tint, with no white stripes; the males are easily separable, that of *S. japonica* being black-brown, with bronzy reflections above and below (as usually in this genus); under surface of male *S. simplicior* always with a trace of red, frequently sordid rose-red throughout; female bright orange, the lines rather more slender than in *S. japonica*; expanse of wings—male, 2 inches 6 lines; female, 3 inches, 4 lines.

Tokei (*Fenton*); Nikko (*Maries*); Yokohama (*Jonas*).

OPHIUSIDÆ.

88. *Chrysorithrum fuscum*, n. s.

♀. Primaries with the same pattern as *C. amatum**, but the whole of the lilacine grey areas replaced by olive-brown; the black spot representing the "orbicular" wanting; the outer border paler than the rest of the wing; secondaries with the black diffused bands narrower and the central orange belt of a different form, wider and with undulated inner margin; body greyer; expanse of wings, 2 inches 7 lines.

Tokei (*Fenton*).

89. *Chrysorithrum rufescens*, n. s.

♀. Also allied to *C. amatum*, but the primaries with pink instead of lilacine ground colour, and with the dark

* *Catocala amata*, Brem.; Ménétriés, Cat. Lep. Mus. Petrop. iii. pl. xvii., fig 4.

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markings rich reddish chocolate; the outer (forked) belt broader, and with much straighter inner edge, the sub-basal belt less acutely angulated; secondaries with a deep orange band across the basal third, tapering from the costa to the end of the cell; the ordinary orange discal belt much deeper in colour and more angular; a large bright ochreous apical patch; a narrow external border continuous with the ochreous patch, and a large diffused marginal obtusely conical patch near the external angle sordid ochreous; body more uniform in colouring; under surface considerably brighter in colour, ochreous, the external area of the primaries and the greater part of the secondaries washed with brownish and irrorated with minute dusky lines; the transverse belt just beyond the middle of the primaries bright black, instead of dark brown, and narrower than in *C. amatum*, the belt beyond it (pale sordid straw-yellow in Bremer's species) bright ochreous, and of more than double the width; external angle clear yellow, a discal diffused black patch above the latter; central line of secondaries distinctly sinuous and irregular instead of simply arched, the nebulous discal belt less distinct and broadly excavated externally; expanse of wings, 2 inches 9 lines.

Yokohama (*Jonas*).

When we received this species I supposed that the above differences between it and *C. amatum* were due to sex; as, however, I now know that the sexes of that species do not differ either in colour or pattern, it has been necessary to give this form a distinct name.

## THERMESIIDÆ.

### Pyrinioides, n. g.

Aspect of *Pyrinia* (*Geometrites*), but apparently allied to *Thermesia*; the primaries triangular, with the costal and outer margins slightly sinuous, apex acute; median vein four-branched, the discoidal cell much elongated; secondaries rather small, short pyriform, the cell short and very broad; costal border swollen near the base; thorax short, rounded; abdomen slender, slightly tapering; head small, with short palpi; antennæ rather short, not pectinated, but with an extremely short internal fringe; posterior tibiæ with a slender pencil, the full length of this joint, emitted from the knee.



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90. *Pyrinioides aurea*, n. s.

Shining golden yellow, reticulated with red-brown; primaries crossed by a dark brown post-median line, to which three red-brown parallel lines run, at about equal distances apart, from the middle of the outer margin, the external angle, and the inner margin; secondaries crossed before the middle by a red-brown line towards which two other lines, from the anal angle and the outer margin, converge; body paler than the wings, back of metathorax whitish; third abdominal segment pink, with red-brown posterior margin; under surface pale straw-yellow; markings nearly as above, less conspicuous; primaries with a dark spot at the end of the cell; internal border sericeous pinky whitish; expanse of wings, 1 inch.

Tokei (*Fenton*).

A most extraordinary little species; the slender pencil of hair which lies close along the front margin of the tibial joint of the hind legs is unusually long for such an appendage.

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XIII. *On the genus* Sypna *of Guénée ; a group of Lepidoptera of the tribe* Noctuites. By Arthur G. Butler, F.L.S., F.Z.S., &c.

[Read June 1st, 1881.]

The genus *Sypna* was founded by M. Guénée in the 3rd part of his 'Noctuélites' (Hist. Nat. des Insectes, Lépidoptères, Vol. vii., p. 144), for the reception of a single Indian species, *S. omicronigera*.

In his 'Catalogue of Lepidoptera-Heterocera,' Walker correctly identified the genus (although at the time we did not possess the typical species), and added descriptions of three new forms under the names of *S. subsignata*, *albilinea*, and *cœlisparsa*; in the same volume, however, Walker described a certain genus *Tavia* (see p. 1275) with two species, *T. instruens* and *T. substruens*, and his subsequent inability to recognise the characters of this his own genus has hitherto robbed *Sypna* of not a few species which should by right be referred to it.

In the 'Supplement' to his Catalogue, Walker adds the description of a *Sypna lugens* from Ceylon, which is not a *Sypna* at all, or anything like one, but is identical with *Achæa reversa* of Walker (Cat. Lep. Het. xiv., p. 1399); and then in the next two or three pages he describes five species as referable to *Tavia*, viz., *T. punctosa*, *T. dubitaria*, *T. caliginosa*, *T. albilinea*, and *T. submarginata*, all of which are true *Sypnæ*; he has thus been the means of misleading subsequent workers who have added more *Sypnæ* to *Tavia*, giving one the impression that the two genera must be extremely closely allied, whereas *Sypna* is a group of *Erebidæ*, similar in pattern and general coloration, as a rule, to *Mormo*; and *Tavia* on the other hand is in part identical with *Speiredonia*, a genus of the family *Ommatophoridæ*, *T. substruens* being conspecific with *S. feducia* of Stoll.

*Tavia*, therefore, will have to be restricted in future to the African species, and should, in my opinion, be placed next to *Latebraria*.



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In the 'Proceedings of the Zoological Society' for 1867, Mr. Moore added three species to the genus—*S. curvilinea*, *S. rectilinea*, and *S. cyaniviitta*; and two other species, *S. biocularis* and *S. catocaloides*, he followed Walker in referring to *Tavia*, they being more like species placed by Walker in the latter genus than some of the forms of *Sypna*.

In 1876 Felder and Rogenhofer brought out the 5th volume of the 'Lepidoptera of the Novara,' in which they followed Mr. Moore, and figured a *Sypna* allied to *S. dubitaria* as *Tarvia* (sic) *martina*.

Lastly, in 1877, I described four species of *Sypna* from Japan in the 2nd volume of the 'Cistula Entomologica,' and subsequently figured them in Parts II. and III. of the 'Illustrations of Typical Specimens of Lepidoptera-Heterocera,' and, in 1880, I added a remarkable new form from Madagascar in the 'Annals and Magazine of Natural History.' Nine new species from Darjiling and Assam remain to be described.

## List of the Species of Sypna.

### 1. *Sypna mormoides*, n. s.

Allied to *S. dubitaria*, but as large as *S. catocaloides*; primaries above dark brown, with very faint lilacine tinge, traversed by numerous pale sinuated lines, the basal half crossed by two irregular black-bordered dark brown bands; a third abbreviated band black, traversed by two irregular pale lines from the costa to the first median branch; a fourth slightly zigzag and undulated black band traversed by an irregularly undulated pale line across the disc; a submarginal series of white-pupilled black spots followed by an undulated black marginal line; fringe dark brown, traversed by a basal, a central, and a marginal pale line; secondaries sericeous fuliginous-brown, the disc crossed by four or five macular parallel discal stripes, which are obsolete towards the costa, but gradually increase in intensity towards the abdominal border, becoming quite black below the second median vein, when they are also rendered more prominent by a background of lilacine scales; a submarginal undulated black line, interrupted below the radial vein by a series of five white dots; marginal black line and fringe as in the primaries; thorax above black-brown, irrorated and transversely striped with whitish; abdomen

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dark fuliginous-brown; under surface of primaries pale fuliginous-brown, slightly yellowish; a subangulated blackish band immediately beyond the cell, followed by a sordid white band, which is again followed by a broad curved tapering dusky belt; a sordid whitish spot just within the end of the cell; a submarginal series of black spots, pupilled externally with cream-colour; fringe traversed by an indistinct slender dusky line, and tipped with blackish; secondaries greyish brown, with faint pinky reflections; a large dusky bordered whitish discocellular spot, followed by an arched indistinct greyish stripe, followed by two arched undulated dusky discal stripes; external border broadly greyish; submarginal spots and fringe as in primaries; expanse of wings, 3 inches 4 lines.

Male, female, Darjiling (*Sadler* and *Lidderdale*).—Type, B. M.

2. *Sypna dubitaria.*

*Tavia dubitaria*, Walker, Cat. Lep. Het. Suppl. 3, p. 939 (1865).

Darjiling (*Lidderdale*, &c.)—B. M.

3. *Sypna martina.*

*Tarvia ? martina*, Felder and Rogenhofer, Reise der Nov. Lep. v. pl. cxiv. fig. 6 (1876).

Sumatra.

The primaries of this species much resemble those of *S. dubitaria*, but the secondaries have a yellow-spotted border, and more nearly resemble the female of *S. fumosa*.

4. *Sypna tenebrosa*, n. s.

Allied to the preceding species, but with the broad dark belt of the primaries interrupted by the veins; the discal band bounding the external area darker; the pale central belt of the secondaries obsolete; the external area paler in the male, darker in the female; the yellowish spots on the fringe of the male only visible towards the apex, those of the female broadly interrupted opposite to the median interspaces; the grey intersecting line also does not cross the yellow spots as in *S. martina*; the under surface seems to be entirely different: it is whity brown in the male, creamy whitish

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in the female, crossed beyond the middle of the primaries by an oblique belt, and at the middle of the secondaries by an arched belt of four alternately dark brown and sordid white bands; the innermost band, however, is indistinct, particularly on the secondaries of the male, where it is also interrupted by a whitish disco-cellular lunule; a broad curved discal belt, smoky brown in the male, blackish in the female, its outer edge very irregular, and forming two unequal projections to the outer margin on the secondaries; a submarginal series of lunate black dots; fringe with dusky tips; body below pale buff; expanse of wings—male 2 inches 3 lines, female 2 inches 4 lines.

Darjiling (*Lidderdale*).—Type, B. M.

5. *Sypna omicronigera.*

*Sypna omicronigera*, Guénée, Noct. iii. p. 145, n. 1530 (1852).

Shillong, Assam, and Darjiling (*Lidderdale*).—B. M.

6. *Sypna cœlisparsa.*

*Sypna cœlisparsa*, Walker, Cat. Lep. Het. xiv. p. 1262, n. 4 (1857).

Assam (*Warwick*).—Type, B. M.

7. *Sypna submarginata.*

*Tavia submarginata*, Walker, Cat. Lep. Het. Suppl. 3, p. 941 (1865).

Darjiling (*Lidderdale*).—B. M.

8. *Sypna umbrosa*, n. s.

Coloration of *S. omicronigera*; primaries dark smoky brown, faintly shot, to beyond the cell, with violet, and crossed by three nearly equidistant irregularly undulated and sinuated black lines, the second passing through the reniform spot, which is very indistinct and greenish grey; a submarginal series of small blackish-dotted whity brown spots; apical third of costal margin spotted with pale buff; fringe spotted, and with a basal line of pale buff; secondaries pale brown, shining whitish towards the costa; thorax and dorsal abdominal tufts dark

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brown; abdomen and under surface pale brown; wings below with broad dusky external borders; primaries with dusky costal border; secondaries with a small blackish curved anal dash; expanse of wings, 1 inch 10 lines.

Shillong, Assam.—Type, B. M.

9. *Sypna biocularis.*

*Tavia biocularis*, Moore, Proc. Zool. Soc. 1867, p. 71.

Bengal (*Russell*).

Nearly allied to *S. caliginosa* of Walker.

10. *Sypna caliginosa.*

*Tavia caliginosa*, Walker, Cat. Lep. Het. Suppl. 3, p. 940 (1865).

Darjiling (*Lidderdale.*)—B. M.

11. *Sypna punctosa.*

*Tavia punctosa*, Walker, Cat. Lep. Het. Suppl. 3, p. 939 (1865).

Shillong, Assam.—B. M.

12. *Sypna subsignata.*

*Sypna subsignata*, Walker, Cat. Lep. Het. xiv. p. 1261, n. 2 (1857).

Singapore (*Wallace*).

13. *Sypna fuliginosa.*

*Sypna fuliginosa*, Butler, Cist. Ent. ii. p. 245, n. 4 (1877); Ill. Typ. Lep. Het. iii. p. 26, pl. xlvii. fig. 8 (1879).

Male, Yokohama (*Pryer*); Nikko (*Maries*); female, Tokei (*Fenton*); Hakodaté (*Whitely*).—Type, B. M.

14. *Sypna fumosa.*

*Sypna fumosa*, Butler, Cist. Ent. ii. p. 245, n. 3 (1877); Ill. Typ. Lep. Het. ii. p. 41, pl. xxxiii. fig. 3 (1878).

Male, Yokohama (*Jonas*); male, female, Tokei (*Fenton*); emale, Hakodaté (*Whitely*).—Type, B. M.

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This species is nearly allied to the preceding, but with the central belt and external area, the discoidal spots, and under surface much paler; the secondaries are also paler, and the post-median line on these wings more angular; it is nevertheless possible that *S. fumosa* may prove to be a well-marked variation of *S. fuliginosa*.

15. *Sypna apicalis*, n. s.

Allied to *S. fumosa* and *S. catocaloides*; from the former it principally differs on the upper surface in its more pointed primaries and subangulated secondaries, the latter with a large marginal lunate creamy ochreous apical patch; on the under side, however, it is entirely different, and more nearly resembles *S. catocaloides*, being of a creamy yellowish colour, the wings crossed by three black bands, slightly curved and converging towards the inner margin (which they do not, however, reach), on the primaries angulated and undulated on the secondaries, where the second and third are almost united from the middle upwards by a large subapical blackish blotch; an indistinct dusky line immediately beyond the third band, and a submarginal series of black dots; secondaries with two parallel black dashes at the end of the cell; expanse of wings, 2 inches 1 line.

Darjiling (*Lidderdale*).—Type, B. M.

As I have compared this with figured species, it should be easy to recognise.

16. *Sypna catocaloides*.

*Tavia catocaloides*, Moore, Proc. Zool. Soc. 1867, p. 71, pl. vii. fig. 3.

Darjiling (*Lidderdale*).—B. M.

17. *Sypna lucilla*, n. s.

Primaries above gravel-brown, crossed by blackish striæ and by a very broad and slightly irregular cream-coloured belt, which is interrupted upon the costa by a triangular black-speckled brown patch, and four or five dots in an oblique series just below it; a broad slaty grey subbasal band, bounded externally on the inner margin by a small bluish white spot; discoidal spots pure white, small; external area crossed by lilacine

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veins, a very irregular black line, followed by a submarginal series of black lunules, spotted externally with pale buff; fringe smoky brown; secondaries with the basal area to the central dusky line creamy yellowish, with brassy and opaline reflections, but the interno-median area densely clothed with pale brown hair; a rather broad band just beyond the middle, its upper half creamy yellowish, its lower half pinky white, traversed, from the abdominal margin, by an abbreviated grey line; a broad tapering blackish discal band; external area testaceous, mottled with brown; submarginal markings and fringe as in the primaries; veins shot with lilacine; thorax whity brown; abdomen smoky brown, with whitish hind margins to the segments; under surface creamy whitish; primaries with the costal and external borders, and the apical area, speckled with black; three blackish abbreviated stripes, the two first parallel and oblique, the third transverse and slightly irregular; fringe dusky; a submarginal series of black dots; secondaries speckled with black, crossed in the middle by two slender undulated and obtusely angulated blackish lines; disc crossed by a slightly sinuous diffused blackish band; a submarginal series of black dots; fringe greyish towards the anal angle; expanse of wings, 2 inches 3 lines.

Darjiling (*Lidderdale*).—Type, B. M.

18. *Sypna obscurata*, n. s.

Nearly allied to the preceding species, but altogether considerably darker, the ground colour of the primaries being of a ferruginous-red tint, clouded with shining grey and mottled with black; the subbasal band is of a shining indigo-blue rather than slate-colour, and is barely distinguishable from the grey cloudings; the broad belt is dull greyish white, streaked with metallic-green, and mottled here and there with black in the male; in the female it is scarcely paler than the rest of the ground colour, but in both sexes its inner edge is considerably straighter than in *S. lucilla*; the reniform spot is represented by three white dots in a slightly curved series; the secondaries are cupreous-brown, with pale costal border and the commencement of a pale central band; the latter is, however, almost lost as it reaches the radial vein; the other markings are altogether darker, the apex is spotted



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with buff, the body is much darker; the under surface much more densely mottled, and distinctly banded with black; expanse of wings—male, 2 inches; female, 2 inches 3 lines.

Shillong and Darjiling (*Lidderdale*).—Type, B. M.

19. *Sypna pulchra*, n. s.

Primaries alternately banded with ochreous and blackish, the whole traversed by numerous undulated parallel black lines; all the blackish bands and black lines brilliantly shot with green towards the base, and with purple beyond; external border pale golden buff towards apex, and external angle dark brown just below the centre; a submarginal series of white-pupilled black dots; fringe varied with blackish; secondaries with basal half lilacine grey; costa cupreous-white; external area blackish, shot with purple, edged internally, and streaked at anal angle and on apical fringe with golden ochreous; submarginal dots as in primaries; body pale; under surface greyish, with whitish post-median band enclosing a dusky stripe, and followed by a purplish black tapering belt; external border buff; white-dotted black submarginal spots; body buff; legs varied with grey; expanse of wings, 1 inch 10 lines.

Darjiling (*Lidderdale*).—Type, B. M.

20. *Sypna curvilinea*.

*Sypna curvilinea*, Moore, Proc. Zool. Soc. 1867, p. 69 pl. vi. fig. 4.

Darjiling (*Lidderdale*, &c.)—B. M.

21. *Sypna picta*.

*Sypna picta*, Butler, Cist. Ent. ii. p. 244, n. 1 (1877) Ill. Typ. Lep. Het. ii. p. 40, pl. xxxiii. fig. (1878).

Hakodaté (*Whitely*); Yokohama (*Jonas*); Tokei (*Fenton*); Nikko (*Maries*).—Type, B. M.

This is the commonest but most beautiful of th Japanese species.

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22. *Sypna moorei*, n. s.

Near to *S. rectilinea* and *S. achatina*; larger than the former and smaller than the latter; much darker than either; the lilacine white lines on the primaries more slender than in *S. achatina*, indistinct, the pale areas barely indicated; primaries with a distinct zigzag black discal line; a white orbicular point in the cell; submarginal spots black and white; under surface as in *S. achatina*; expanse of wings, 2 inches 2 lines.

Two specimens, Shillong, Assam.—Type, B. M.

23. *Sypna rectilinea.*

*Sypna rectilinea*, Moore, Proc. Zool Soc. 1867, p. 70.
*Tavia albilinea*, Walker, Cat. Lep. Het. Suppl. 3, p. 940 (1865).

Darjiling (*Lidderdale*).—B. M.

24. *Sypna albilinea.*

*Sypna albilinea*, Walker, Cat. Lep. Het. xiv., p. 1261, n. 3 (1857).

Silhet.—Type, B. M.

This is allied to the preceding species.

25. *Sypna achatina.*

*Sypna achatina*, Butler, Cist. Ent. ii. p. 245, n. 2 (1877); Ill. Typ. Lep. Het. iii. p. 26; pl. xlvii. fig. 7 (1879).

Hakodaté (*Whitely*); Yokohama (*Jonas*).—Type, B. M.

26. *Sypna cyanivitta.*

*Sypna cyanivitta*, Moore, Proc. Zool. Soc. 1867, p. 70.

Darjiling (*Lidderdale*).—B. M.

27. *Sypna kirbyi*, n. s.

Allied to *S. cyanivitta*; primaries lilacine chocolate-brown, crossed before the middle by a broad regular pale greenish-grey band, traversed on each side by two parallel lilacine lines, the outer ones interrupted by an elongated ochraceous reniform spot; a pyriform chocolate-brown

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streak, and a dot on each side of it upon the costa within the band; a blackish piceous line limiting the band internally, and an externally diffused band of the same colour limiting it externally; an incomplete elbowed subbasal black band, bordered on both sides with testaceous; external area testaceous, irregular, sinuated internally, and limited by a series of blackish spots; a submarginal series of small white spots dotted with black; secondaries fuliginous-brown; an indistinct pale-bordered dusky curved stripe from the abdominal border to the radial vein; a testaceous stripe bordered externally with blackish from the anal angle to the second subcostal branch; a submarginal series of white-pupilled black spots, terminating at anal angle in a short white-edged black stria; fringe with a slender undulated basal testaceous line; thorax fuliginous-brown; antennæ ferruginous towards the tips; abdomen greyish brown; under surface whity brown, densely irrorated with greyish brown scales; primaries not speckled towards the interno-basal area; a sinuous broadly whitish-bordered black-brown band from beyond the cell to the inner margin, its outer edge bounded by a curved dusky band; an abbreviated transverse subapical dash; a submarginal series of black and pale yellowish dots; secondaries with a blackish-edged whitish disco-cellular spot; a sinuous post-median blackish stripe, with pale external border, followed by a nebulous indistinct dusky discal belt; submarginal spots as in primaries; expanse of wings, 2 inches 2—5 lines.

Darjiling (*Lidderdale*).—Type, B. M.

28. *Sypna complicata.*

*Sypna complicata*, Butler, Ann. & Mag. Nat. Hist. ser. 5, vol. 5, p. 389, n. 46 (1880).

Fianarantsoa, Madagascar (*Cowan*).—Type, B. M.

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In determining the species of *Sypna* I have been assisted by Mr. Kirby's MS. List of the described species, for which I have to thank him, as it has satisfied me that I have overlooked nothing.

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# XIV. Rhynchota *from the Australian and Pacific Regions.*

By W. L. Distant.

[Read June 1st, 1881.]

Having recently had an opportunity, through the courtesy of Dr. Schmeltz, of examining the *Rhynchota* contained in the Museum Goddefroy of Hamburg, which is principally, if not entirely, derived from the above regions, I have, by the additional aid of specimens in my own collection, been enabled to add a number of new species to these faunas. The following is the first contribution, and is interesting in adding four Australian species to the genus *Menida*, a genus hitherto considered peculiar to the Ethiopian, Oriental, and Eastern Palearctic Regions.

## HEMIPTERA-HETEROPTERA.

### PENTATOMIDÆ.

### PENTATOMINÆ.

*Niarius illuminatus*, n. s.

Dark fuscous; head with the lateral margins and a central longitudinal line, pronotum with the lateral margins and two small central levigate spots on disk situated a little before middle, scutellum with two impunctate spots near basal angles and apex, base of costal margin of corium, connexivum, lateral margins of sternum, lateral margins and disk of abdomen beneath, coxæ, legs, and rostrum, luteous. Antennæ black, with the outer margin of basal and bases of two apical joints luteous. The basal joint of the antennæ does not reach the apex of the head. Head transversely striate; pronotum thickly and finely punctate; lateral margins ampliated and sinuated; base slightly gibbous and subrugulose. Scutellum finely punctate, and faintly and transversely wrinkled near base. Corium finely punctate. Under side of head, sternum, and lateral margins of abdomen, thickly punctate.



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In some specimens the fuscous surface is much irrorated with luteous. Long. 10 mm.

*Hab.* Australia, Gayndah.

This species differs from *N. umbrosus*, Stål, by the colour of the head, basal margins of the corium and legs; and from *N. venosus*, Stål, by the shortness of the first joint of the antennæ and markings, &c.

*Cephaloplatys fasciatus*, n. s.

Ovate, ochraceous, irregularly and darkly punctate. Head with the lateral lobes ampliated, reflexed, sinuated on the lateral margins, much longer than central lobe, cleft at apex, and thickly and darkly punctate; punctures arranged somewhat in longitudinal series; central lobe, excepting base, almost impunctate. Antennæ red or ochraceous; second and third joints subequal, a little shorter in length than fourth and fifth, which are also subequal. Pronotum with the lateral margins ampliated, gradually widening from base, somewhat straight, acutely pointed at anterior apex, and sparingly punctate; the whole pronotal surface is thickly and coarsely punctate, but a lineal series of closely placed and very dark punctures extends tranversely across disk between lateral angles; a double series of like punctures are situated on the inner side of each lateral margin, and there is also an anterior submarginal row of the same. The pronotum is much deflexed anteriorly. Scutellum with an elongate black fovea at each basal angle, and a series of six longitudinal rows of dark punctures commencing at base, of which two are lateral and terminate midway on lateral margin; the two central are widest, but amalgamate midway, and terminate in a narrow row at apex; on each side of these is a linear and unbroken row terminating on apical margin. Corium with some irregular longitudinal rows of darker punctures. Membrane creamy white, with the nervures darker. Under side of body red or ochraceous; head and sternum coarsely, and abdomen finely, punctate; head and sternum with a submarginal and irregular black fascia, slightly punctate on prosternum, almost obsolete on mesosternum, and levigate or very slightly punctate on metasternum. Abdomen with two broad submarginal, and a central and more broken and irregular, black fasciæ. Legs slightly

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spotted with fuscous; rostrum reaching posterior coxæ, pitchy at apex. Long. 11 to 12 mm. Lat. 6 mm.

*Hab.* Queensland, Rockhampton, Sidney.

Besides the very distinct markings, this species differs from others of the genus by the elongated form of the body. In general appearance it resembles species of the genus *Gellia* of the subfamily *Phyllocephallinæ*.

*Stollia trimaculata*, n. s.

Ochraceous, coarsely and darkly punctate. Head much shaded with fuscous, coarsely punctate, transversely striate on disk, and with the central lobe a little longer than the lateral. Antennæ with the first three joints ochraceous, fourth and fifth fuscous, fourth pale at base; second joint a little longer than the third, fourth subequal with second, and shorter than fifth. Pronotum with the lateral angles rounded and faintly subprominent, the lateral margins luteous and levigate, a somewhat raised and levigate transverse line on disk between lateral angles, and two fuscous patches on disk near anterior margin. Scutellum with a pale luteous levigate callosity in each basal angle, and three fuscous spots on apical margin, two lateral and one central. Base of costal margin of corium luteous and levigate. Membrane fuscous. Head beneath shining black and punctate; sternum ochraceous, thickly covered with coarse dark punctures, lateral margins of prosternum and underside of base of costal margin of corium luteous and levigate. Abdomen with the disk black and thickly and finely punctate, lateral margins broadly and including stigmata, anal appendage, and lateral margins of metasternum luteous and punctate. Legs luteous, sparingly spotted with fuscous. Rostrum luteous, with the apex pitchy. Long. 5½ mm.

*Hab.* Sidney.

This species is allied to *S. distacta*, Dall., and belongs to that section of the genus in which the margins of the abdomen, including the stigmata, are pale and unicolorous.

*Stenozygum persignatum*, Walk.

*Strachia persignata*, Walk., Cat. Het. ii., p. 347, 96.
*S. cœlestes*, Voll., Versl. Ak. Amst., Nat. (2), ii., p. 186, 54.

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Var. *a*. Head with the luteous marks much smaller, and the central one between the eyes wanting. Pronotum with the central luteous line, but without the irregular spots on disk.

*Hab.* Queensland, Peak Downs.

*Stenozygum australis*, n. s.

Bluish black. Head with an elongate pale luteous spot on each lateral lobe near apex, and a transverse spot of the same colour on each side in front of eyes. Lateral lobes somewhat widely cleft at apex. Antennæ black, basal joint shortest, remaining joints subequal. Pronotum with the anterior margin narrowly, the lateral margins more broadly, and each side of the posterior margin near lateral angles, narrowly luteous; a luteous transverse spot on each side of anterior margin, a small pale luteous spot near centre of lateral margins, and a central ⊥-shaped spot of the same colour on disk, the base of which rests on posterior margin, and the apex reaches rather more than midway; the disk is somewhat coarsely but sparingly punctate, with a deep transverse impression. Scutellum with a large central dark luteous levigate spot at base, from which extends a narrow pale luteous line not reaching apex, but crossed by a narrow fascia of the same colour, thus forming a cruciform mark; the apex also pale luteous. Corium with the base of costal margin luteous, which colour is then continued in a subcostal streak till it joins a large transverse spot on apical margin, but which does not extend to apical angle. Membrane bluish black, apical margin pale, fuscous hyaline. The scutellum is gibbous and levigate at base, after which it is obscurely punctate and transversely rugulose; the corium is thickly and finely punctate. Under side of body pale luteous; lateral margins of head beneath, a large subquadrate spot on prosternum, mesosternum and metasternum, a submarginal fascia and lateral portion of the incisures, basal margin of apical segment, femora, excepting base, and some linear lines on tibiæ, bluish black. Rostrum bluish, with the base paler. Long. 6 mm.

*Hab.* Queensland, Peak Downs.

Var. *a*. Head immaculate, central pale discal fascia to pronotum, lineal without the transverse base.

*Hab.* Queensland, Peak Downs.

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This species differs from *S. persignatum*, Walk., the other known Australian species, by the more elongate body and absence of luteous callosities at basal angles of scutellum; in general shape and hue it is more allied to *S. speciosum*, Dall.

*Catacanthus viridicatus*, n. s.

Head, pronotum, and scutellum dark bluish, with green reflections; corium bright emerald-green. Antennæ dark greenish, sparingly pilose; second joint a little shorter than third, and subequal in length to fourth (fifth wanting). Lateral lobes of the head with a few irregular transverse sulcations. Pronotum levigate, very faintly and obscurely wrinkled towards lateral and anterior margins; lateral margins and two small transverse linear impressions near anterior margin luteous. Scutellum levigate, sparingly punctate towards apex, which is luteous; a raised central longitudinal line commences about the middle and terminates in a hollow impression a little before apex. Corium thickly punctate and subrugulose. Membrane with the basal half apparently dark cupreous from reflection of dark surface of abdomen, apical half pale fuscous. Connexivum luteous, with a bluish quadrate spot on incisures. Body beneath and femora luteous; abdomen with a marginal row of blue spots at incisures, and two transverse green streaks on anal appendage; apices of femora and tibiæ dark greenish. Rostrum dull greenish, basal joint and under side of second joint luteous. Ventral spine long, about reaching anterior coxæ. Long. 25 mm. Lat. pronot. angl. 11 mm.

*Hab.* Tonga Islds.

This species is peculiar in having pale coloured femora, a character possessed by no other species of the genus.

*Menida consignata*, n. s.

Black. Head above with a central and two lateral lines, the last suddenly turned inwards from near eyes to base, a small transverse spot in front and hind margin of eyes; pronotum with anterior and lateral margins, a lateral submarginal band, and a large irregular spot on disk; scutellum with about basal half and apical fourth; connexivum; lateral margins of head and body beneath,



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a large spot at base of head, and a sternal row of three spots situated at coxæ, abdomen with a discal row of three spots on each side situated on third, fourth, and fifth segments, and legs luteous or testaceous. Antennæ ochraceous, pilose, second and third joints subequal, fourth and fifth longest, incrassated and subequal. Head, pronotum, and scutellum somewhat sparingly but deeply punctate, corium thickly punctate, somewhat ochraceous at base, under side of body punctate, disk of abdomen levigate. Rostrum about reaching posterior coxæ, pitchy, first and second joints subluteous. Long. 6 to 7 mm.

*Hab.* Queensland, Peak Downs.

This species belongs to the group of the genus containing the African species, *M. loriventris*, Germ., &c.

*Menida plebeia*, n. s.

Ochraceous, punctured and mottled with fuscous. Head broad, thickly and darkly punctate, margins of central lobe distinctly bordered by dark punctures; antennæ pale ochraceous, first three joints subequal in length, fourth and fifth longest, incrassated and fuscous at apices. Pronotum coarsely and darkly punctate with the anterior and lateral margins narrowly levigate and luteous, and a broad basal fascia and two small transverse fasciæ on disk near anterior margin dark fuscous. Scutellum coarsely and darkly punctate, with a pale luteous narrow levigate transverse fascia at base on each side of which is a small dark fuscous spot, with a small luteous levigate spot in each basal angle, a large pyramidal dark fuscous spot on disk, and apex pale luteous and levigate. Corium coarsely and darkly punctate, with an indistinct submarginal longitudinal narrow fuscous streak. Connexivum pale luteous, with a faint testaceous stripe at incisures, and segmental spines dark fuscous. Membrane cupreous. Under side of body and legs luteous, under side of head and lateral margins of sternum coarsely and darkly punctate. Abdomen beneath darkly punctate, punctures gradually decreasing towards disk, which is levigate, a marginal row of small testaceous spots and stigmata also testaceous. Rostrum reaching posterior coxæ, luteous, fuscous towards apex. Long. 6 mm.

*Hab.* Sidney. Peak Downs.

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*Menida purpuraria*, n. s.

Pale testaceous, coarsely punctate. Head with the central lobe margined with black half-way from apex, from thence these black lines are outwardly reflexed and continued to base as fuscous streaks; margins of lateral lobes very narrowly pale levigate, a subfoveate impression at inner margin of eyes covered with black punctures. Antennæ testaceous, fourth joint with the apex pitchy (fifth wanting), second and third joints subequal in length. Pronotum with the lateral angles subprominent, the lateral and anterior margins luteous and levigate (the anterior margin more narrowly so), and two transverse fuscous oblong impressions on disk forked externally; excavated near lateral margins, and slightly gibbous at base. Scutellum with three pale levigate spots at base, one central, and one at each angle, apex pale, apical margin very pale and levigate. Membrane pale fuscous. Body beneath and legs ochraceous, lateral margin of head, sternum, and abdomen broadly and coarsely punctate, the punctures on head and sternum fuscous. Ventral spine and basal abdominal spot bright testaceous; abdominal margin with a row of fuscous spots at segmental incisures. Rostrum reaching ventral spine, with the tip pitchy. Long. 6 mm.

*Hab.* Queensland.

Allied to the preceding species, *M. plebeia*, but differs by the less robust head, broader body, absence of levigate fascia at base of scutellum, different colour, &c.

*Menida personata*, n. s.

Dull ochraceous, more or less covered with dark punctures. Head coarsely punctate, with the lateral margins and five raised lines on disk luteous and levigate. Pronotum somewhat coarsely punctate and slightly rugulose, lateral and anterior margins narrowly luteous and levigate, with two angulated fuscous patches on disk near anterior margin, which are pointed inwardly, and enclose a small luteous levigate spot. Scutellum sparingly but coarsely punctate, with an irregular testaceous spot near base, and two others of the same colour near apex, narrowly divided in the centre. Corium sparingly and coarsely punctate, with a large irregular testaceous spot on inner margin parallel with the subapical spots of the

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scutellum. Membrane pale fuscous, with the nervures darker. Under side of body and legs luteous, lateral margins of head, sternum, and abdomen broadly and sparingly covered with dark punctures, a lateral row of fuscous spots on each side of sternum near coxæ, and a series of faint transverse segmental testaceous streaks on each side of abdomen. Femora spotted with fuscous. Antennæ with the basal joint luteous, second and third testaceous, fourth and fifth black, with their bases testaceous; third joint a little longer than second, fourth and fifth slightly incrassated. Head broad, rounded in front, body broad and ovate. Long. 7 mm. Lat. 5 mm.

*Hab.* Queensland, Peak Downs.

This species is allied to that section of the genus which is represented by the Oriental species, *M. histrio*, Fabr.

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XV. *On the Tortricidæ, Tineidæ, and Pterophoridæ of South Africa.* By Lord Walsingham, M.A., F.Z.S., &c.

[Read June 1st, 1881.]

Through the courtesy of Mr. Roland Trimen, Curator of the Natural History Museum at Capetown, South Africa, I have had an opportunity of examining the Micro-Lepidoptera collected by Mr. W. D. Gooch, of Spring Vale, Victoria County, Natal, chiefly in the neighbourhood of Spring Vale, but partly in the vicinity of D'Urban. Mr. Trimen informs me that they form part of a large collection of Lepidoptera-Heterocera, made by Mr. Gooch during the years 1878 to 1879, and lately acquired by the Trustees of the South African Museum.

To enable me to identify such as have already been characterised it has been necessary to refer to all the descriptions of South African species published up to the present time.

Very little has as yet been done to make known to entomologists the Micro-Lepidoptera of South Africa. Only about 78 species of *Tortricidæ* and *Tineidæ* have been described by different authors as occurring in that district.

Professor Zeller, in the 'Linnæa Entomologica,' vol. v. (1851), described *Nemophora crinigerella*; and in vol. vi. (1852), two species of *Pterophoridæ*.

In the 'Handlingar Kongliga Svenska Vetenskaps Akadamien,' 1852, the same author described one new genus, *Eccopsis*, and six new species of *Tortricidæ*, exclusive of *Nycteolidæ*, but including the genus *Choreutis*, Hüb., five new genera, and thirty-one new species of *Tineidæ* and *Pterophoridæ*, all from Mr. Wahlberg's collection.

Mr. Stainton, in the Trans. Ent. Soc., Lond., n. s., vol. v., pp. 220—223 (1860), described five new species of *Tineidæ* from Natal.

Mr. Walker, in the years 1863 to 1866, in his 'Catalogue of Lepidoptera-Heterocera in the British



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Museum,' vols. xxviii. to xxxv., described two new genera and six new species of *Tortricidæ*, with six new genera and twenty-seven new species of *Tineidæ* and *Pterophoridæ* from Natal and the Transvaal.

In 1875 Herr Pastor Wallengren, in the 'Öfversigt Af. Kongl. Vet. Akad. För.,' 1875, Arg. 32, pp. 127—130, described five new species of *Tineidæ* and one new *Alucita;* and, in the same year, Messrs. Felder and Rogenhofer figured eight species as new in the 'Reise der Fregatte Novara.'

Thus the whole number of South African species in the above-named groups (including also the *Alucitidæ*), which have been distinguished up to the present time, amount to 92 only, and this number must be somewhat reduced, as I propose to show in the course of the present paper, by the necessary rectification of their synonymy.

The examination of Mr. Gooch's collection has been very instructive; not only has it been found to contain many new and interesting forms, but the necessary study of the work already done has made me acquainted with the typical species, upon which no less than eleven genera have been founded, although four of these cannot rightly be retained. It is much to be regretted that many of Mr. Gooch's specimens are not in sufficiently good condition to warrant their description, and that for this reason it has been necessary to pass over much new material which might otherwise have been made available to increase our very limited acquaintance with these local forms.

The following, so far as I am able to ascertain, is a complete list of described South African *Tortricidæ*, *Tineidæ*, *Pterophoridæ*, and *Alucitidæ*, up to the present time. It will be found to include descriptions of several new specific and some new generic forms from Mr. Gooch's collection, with the addition of a few species from my own cabinet, and two from the British Museum.

I have endeavoured to make the list somewhat more useful by pointing out the synonymy of the genera and species wherever sufficient evidence has been found to enable me to determine it, as well as by making a few notes upon the typical specimens in the collection at the British Museum where Mr. Walker's descriptions have seemed to require additions or corrections.

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TORTRICIDÆ.

CACŒCIA, *Hübner.*

*Cacœcia reciprocana.*

*Teras reciprocana*, Walk., Cat. Lep. Het., B. M., xxviii. 295.

In Mr. Gooch's collection are two female specimens, which, although differing in the intensity of their markings from the typical example described by Mr. Walker, I cannot consider to be specifically distinct. The bad condition of the original type prevents any very accurate comparison, but there remain upon it even yet some slight traces of those darker markings, the absence of which might otherwise have appeared to distinguish it from the two which are now before me. In one of these, on the pale testaceous surface of the fore wings, are to be found—first, an outwardly angulated fascia on the basal fourth of the wing interrupted above the middle; secondly, an outwardly angulated median fascia attenuated but not interrupted above the middle; thirdly, a shade along the apical margin starting obliquely outwards from the commencement of the outer third of the costa, angulated below the middle and confluent along the dorsal margin with the median fascia: all these markings are of a darker or more fuscous testaceous shade than the ground colour of the wing. In the second example these markings are almost entirely obsolete, except upon the costal margin. I should consider this specimen as forming the connecting link between the type of the species and the one above described.

The male will probably be found to have a costal fold, as the structure and appearance of the three females before me are in all respects those of the genus *Cacœcia.*

Taken at light in November. Spring Vale.

*Cacœcia ? capitana.*

*Tortrix capitana*, F. & R., Reise d. Nov., pl. cxxxix., figs. 48, 49.

"Affinis *Ter. reciprocanæ*, Walk."

This species seems to differ in the absence of transverse markings on the fore wings from any which are

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represented in the British Museum or in Mr. Gooch's collection.

*Cacœcia adustana*, n. s. (Pl. X., fig. 1).

Capite palpis antennis et thorace brunneo-cervinis. Alis anticis (costa ante apicem emarginata) dilute subochraceo-cervinis; fascia irregulari, postice reduplicata, macula costali post-medium, costa extrema has interjacente, et ciliis marginis apicalis, fusco-purpureo suffusis ferrugineo dilute sublituratis. Posticis dilute albido-stramineis.

Head, palpi, thorax and antennæ fawn-brown, the palpi projecting scarcely more than the length of the head beyond it. Fore wings (with the costa slightly emarginate before the apex, the apical margin slightly indented) pale ochraceous fawn-colour, with a conspicuous irregular purplish fuscous fascia, commencing before the middle of the costa, tending outwards to the upper edge of the cell, whence it is reduplicated; the inner branch running obliquely to the dorsal margin, slightly angulated on the fold; the outer branch biangulate, one angle being at the end of the cell and one on its lower edge, whence it proceeds obliquely outwards to the outer half of the dorsal margin; there is a rather triangular purplish fuscous costal spot beyond the middle, faintly prolonged by a few brownish scales in the direction of the anal angle, and the extreme edge of the costa itself is purplish fuscous, except at the base and apex. Cilia purplish fuscous. The spaces round and about the dark markings and between the forks of the central fascia are more or less suffused or blotched with ferruginous-brown, blending into the paler ground colour of the wing. Under side pale straw-colour, except the dark purplish cilia. Hind wings and cilia pale whitish straw-colour. Expanse, 24 mm.

In Mr. Gooch's collection are two specimens, both females, taken at light in October at Spring Vale.

LOZOTÆNIA, *Herrich-Schäffer*.

*Lozotænia capensana*.

*Teras capensana*, Walk., Cat. Lep. Het., B. M., xxviii. 295.

*Teras meridionana*, Walk., Cat. Lep. Het., B. M., xxviii. 295.

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This species is represented in Mr. Gooch's collection by four males and two females, in somewhat better condition than Mr. Walker's original types which are in the British Museum. Having quoted as synonyms the two names supposed by Mr. Walker to have been given by him to two distinct species, I feel that no apology will be required for reprinting at full length the Latin diagnosis of each as it appears on the same page of his Catalogue:—

"53. *Teras capensana.*

"*Mas.*—Pallide cervina; alæ anticæ acutæ, strigulis plurimis transversis fuscescentibus; posticæ pallide cinereæ."

"55. *Teras meridionana.*

"*Mas.*—Pallide cervina; alæ strigulis plurimis transversis indistinctis obscurioribus; anticæ acutæ; posticæ albido-cinereæ."

The English descriptions which follow are almost as nearly parallel word for word as the Latin. I may add that a careful examination of the typical specimens still further confirms the evidence of their identity. The only appreciable difference between them is stated by Mr. Walker thus:—*T. capensana*, "length of the wings 8 lines"; *T. meridionana*, "length of the wings 9—10 lines". The same difference of size occurs between some of Mr. Gooch's specimens. This species seems to belong without doubt to the genus *Lozotænia*, Herrich-Schäffer, as defined by Heinemann.

Taken "at light on grass." Spring Vale. October, November, and April.

*Lozotænia dorsiplagana*, n. s. (Pl. X., fig. 2).

Capite antennis et alis anticis subrufescente testaceis. Alis anticis, costa arcuata fascia subobsoleta a medio costæ versus angulum analem oblique projecta; ante eam plaga dorsali elongata quadrangulari sordide albida tenuiter substriata; fascia abbreviata ante apicem; margine apicali cum ciliis aliquot obfuscato. Posticis saturate ochraceo-cinereis.

Head rather reddish testaceous; palpi projecting about the length of the head beyond it, subrostriform. Fore wings with the costa rounded, reddish testaceous, with an indistinct oblique fascia from the middle of the



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costa, tending obliquely outwards towards the anal angle, preceded by a dingy whitish elongate quadrangular dorsal patch, which touches its inner edge, and contains a few slender streaks of the darker ground colour coming from the dorsal margin. Beyond the central fascia, about half-way towards the apex, is an abbreviated oblique fascia of the same colour. The apical margin and cilia are slightly darker clouded. Hind wings very pale cinereous-ochreous. Expanse—male, 17 mm.; female, 23 mm.

One male and two females in Mr. Gooch's collection.

*Lozotænia diluticiliana*, n. s. (Pl. X., fig. 3).

Capite antennis palpis et alis anticis testaceis, medio costæ extremæ dilutiore subochraceo; fascia mediali obliqua macula costali triangulari et margine apicali præcipue in dimidio superiore subpurpurascenti fuscis. Ciliis dilutissime stramineis. Alis posticis dilute griseo-fuscis, ciliis pallidioribus.

Head testaceous; antennæ simple, together with the rather short abruptly attenuated palpi also testaceous. Fore wings testaceous, with an oblique darker (almost purplish fuscous) central fascia more distinct towards the costal margin, clearly defined on its inner edge, but becoming blended with the paler ground colour outwardly, especially below the middle of the wing; a rather triangular costal spot half-way between this and the apex, as well as the apex itself, are of the same colour, which also very narrowly overspreads the apical margin, especially on its upper half. Cilia very pale straw-colour. Hind wings diluted greyish fuscous, with paler cilia. Expanse,14 mm.

One specimen in the British Museum from South Africa, presented by Mr. Roland Trimen.

*Lozotænia elegans*, n. s. (Pl. X., fig. 4).

Capite cum palpis bis longioribus porrectis ochraceo-griseis. Alis anticis dilute ochraceo-griseis olivaceo subreticulatis; fascia obliqua et macula costali ante apicem triangulare olivaceo-fuscis. Posticis dilute fuscescenti-griseis, puncto costali ante apicem fusco, et linea in medio ciliorum pallidiorum fuscescenti-grisea.

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Head, thorax, palpi and antennæ pale yellowish grey, the palpi extending twice the length of the head beyond it, the second joint rather coarsely scaled, tapering outwardly towards the short obtuse apical joint. Fore wings with the costa rather prominently arched near the base, the apical margin slightly oblique, somewhat emarginate about the middle, pale yellowish grey, minutely streaked and slightly spotted with olivaceous scales, giving them a rather reticulated appearance; an olivaceous fuscous outwardly oblique fascia from before the middle of the costa; an elongate triangular costal spot before the apex, and a slight shade near the base of the dorsal margin of the same colour. Hind wings dull greyish, with a slight fuscous costal spot near the apex, and a dull greyish line along the middle of the paler cilia. Expanse, 15 mm.

As compared with the American *Lozotænia peritana* (*Smicrotes peritana*, Clem.), it can only be distinguished by its larger size, longer palpi, and slightly less ochreous colour; the costa is also more arched towards the base.

Four specimens in Mr. Gooch's collection.

Taken at light at Spring Vale in November, and in the Botanic Garden at D'Urban in September and October.

### Syndemis, *Hübner.*

*Syndemis saburrana*, Zell., Handlingar Kong. Svensk. Vetens. Akad., 1852, pp. 83, 84.

*Sciaphila saburrana*, Walk., Cat. Lep. Het., B. M., xxviii. 345.

### Compsoctena, *Zeller.*

*Compsoctena primella* (Pl. X., fig. 5).

*Compsoctena primella*, Zell., Handlingar Kong. Svensk. Vetens. Akad., 1852, pp. 86—88.

*Tissa inquinatalis*, Walk., Cat. Lep. Het., B. M., xxviii., pp. 513, 514.

*Thapara natalana*, Walk., Cat. Lep. Het., B. M., xxx., pp. 995, 996.

*Galaria subauratana*, Walk., Cat. Lep. Het., B. M., xxxv., p. 1806.

This species is represented in Mr. Gooch's collection

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by six specimens, and is probably not uncommon in South Africa.

Professor Zeller, in 1852, founded for it the genus *Compsoctena*, and placed it among the *Tineidæ*.

Mr. Walker, in 1863, re-described it, from a specimen received from Mr. Trimen, under the new generic and specific names, "*Tissa inquinatalis*," pointing out very clearly its essential characters, but failing to recognise it as the insect previously described by Zeller. I have carefully examined Mr. Walker's typical specimen, which he placed among the *Tineidæ*.

Among the addenda to his Catalogue, vol. xxx., p. 995, he characterised the new genus *Thapava*, of which the description agrees in every essential particular with that of the genus *Tissa*, except that whereas of *Tissa* he writes "antennæ subpectinatæ," he describes those of *Thapava* as "pectinatæ," the latter being more decidedly correct. I have been unable to find Mr. Walker's type of *Thapava natalana*, the only species placed by him in this genus, which he referred to the *Tortricidæ*, but his description of it is fairly accurate as applied to a somewhat dark variety of the species before us, and I have no doubt that this species was intended to be indicated. The missing type was received from Natal in Mr. Gueinzius' collection.

Lastly, in vol. xxxv. of the same Catalogue, p. 1806, Mr. Walker creates another new genus, *Galaria*, Walk., and remarks of the one species, which he accurately describes under the name of *Galaria subauratana*, that it "has some affinity to the *Tineidæ*," although he now places it again, as I venture to think with good reason, among the *Tortricidæ*.

The two typical specimens which I have carefully examined, together with those in Mr. Gooch's collection, belong undoubtedly to the same species as the specimen labelled by Mr. Walker, "*Tissa inquinatalis*," and are also part of Mr. Gueinzius' collection.

I will not add anything to the already too copious re-description of this curious and interesting insect. It is very nearly allied to a North American genus, *Synnoma*, Wlsm., of which figures and description are to be found in Part IV. of the 'Catalogue of typical specimens of Lepidoptera-Heterocera in the British Museum,' and which was there placed among the *Tortricidæ* as allied to *Exapate*, Hüb., a genus which

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has itself been placed both in the *Tineidæ* and in the *Tortricidæ* by different authors. *Compsoctena* differs from *Synnoma* in neuration, the apical vein of the fore wings not being forked as in that genus.

All the specimens which have come under my notice at present have been males, but it is probable that the females, as in *Synnoma* and *Exapate*, have smaller wings and larger bodies than the males. It would be interesting to know whether it agrees with the allied North American genus in the gregarious habits of its larvæ.

There are six examples in Mr. Gooch's collection. His note upon them is, "Umzinto Beach; in bush. September."

*Compsoctena connexalis.*

*Tissa? connexalis*, Walk., Cat. Lep. Het., B. M., xxviii. 514.

This appears to belong to the same genus as the preceding, but is undoubtedly a distinct species.

CONCHYLIS, *Treitschke.*

*Conchylis trimeni*, F. & R., Reise d. Nov., pl. cxxxvii., fig. 51.

There are four specimens of a large species of *Conchylis* in Mr. Gooch's collection, which, although in very bad condition, I should have no hesitation in referring to the species, figured by Felder and Rogenhofer, under the above name. A description must be deferred until better examples have been obtained.

This species was taken at light at D'Urban and at Spring Vale, in September, October, and November.

*Conchylis africana*, n. s. (Pl. X., fig. 6).

Capite et palpis ochreis. Thorace brunneo-fusco. Alis anticis dilutissime ochraceo-albidis; plaga basali ante costam finita, fascia ultra-mediali versus angulum analem postice diffusa, macula costali ante apicem, punctis marginalibus in costa, et margine apicali, cum ciliis, brunneo-fuscis; strigulis dilutioribus interjacentibus; posticis dilutissime cinereis-fuscescenti subreticulatis.

Head brownish ochreous. Palpi, projecting fully the

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length of the head beyond it, brownish ochreous, somewhat paler on their inner sides, the apical joint touched with fuscous; antennæ pale fuscous; thorax brownish fuscous. Fore wings scarcely emarginate below the apex, very pale whitish ochreous, with a distinct brownish fuscous basal patch covering rather less than a fourth of the dorsal margin, gradually widening towards the costa, but not reaching it; a conspicuous brownish fuscous fascia beyond the middle, more clearly defined on its inner than on its outer edge, and with a slight projection on its inner side within the lower half of the cell; it is slightly wider on the dorsal than on the costal margin, and is indistinctly diffused outwardly below the middle in the direction of the anal angle; a diffused brownish fuscous costal patch lies between the fascia and the apex, and at the apical margin is a series of small dentate spots of the same colour, followed by a slender pale line along the extreme margin. Cilia brownish fuscous, with a slight pale line along their middle; a slight ochreous shade lies immediately below the base of the costa, running parallel to it along the upper edge of the basal patch. The costa itself is brownish fuscous at the base, with spots of the same colour unequally distributed throughout its length, being smaller and more frequent before the middle than beyond it. On the pale portions of the wing between the dark markings are some rather indistinct brownish fuscous dots and streaklets, of which three arising on the dorsal margin before the middle are the most conspicuous. Hind wings very pale cinereous, spotted irregularly with dilute greyish fuscous, giving them a reticulated appearance. Cilia the same colour as the hind wings, with a greyish fuscous line along the middle. Expanse, 16—18 mm.

Three specimens, of which one only is in good condition, taken at light in October at Spring Vale. I have also a specimen from Zululand.

SERICORIS, *Treitschke*.

*Sericoris scabellana*, Zell., Handlingar Kong. Svensk. Vetens. Akad., 1852, p. 81.

*Penthina scabellana*, Walk., Cat. Lep. Het., B.M., xxviii. p. 377.

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ECCOPSIS, *Zeller.*

*Eccopsis wahlbergiana*, Zell., Handlingar Kong. Svensk. Vetens. Akad., 1852, pp. 79, 80. Walk. Cat. Lep. Het., B. M., xxviii., p. 413.

A single female specimen in Mr. Gooch's collection agrees with the description of this species, except that the costal markings would perhaps be more correctly described as olivaceous rather than ochreous; but as I am unable to compare it with the typical examples, which are believed to be in the Stockholm Museum, its identity must be regarded as somewhat doubtful. If rightly identified it is especially interesting as representing a genus established by Professor Zeller for the reception of this South African species, but more lately adopted by other authors (Lederer, 'Wiener Entomologische Monatschrift,' 1859, 111, p. 288; von Heinemann, 'Schmetterlinge Deutschlands und der Schweiz,' vol. i., pp. 138, 139; Staudinger and Wocke, 'Catalog,' p. 251, No. 1027, &c.) to include *latifasciana*, Haw. (*venustana*, Hüb.), a European species of very remarkable structure, which appears to be undoubtedly congeneric with the numerous North American representatives of the genus *Exartema*, Clemens. As to the identity of *Exartema* and *Eccopsis*, Zeller writes in two footnotes (Verh. z.-b. Ges. Wien. xxv. 268):—

(1) "Wickler in d. Wien Zeitschr. 1859. S. 288, Meine Gattung *Eccopsis* (Micropt. Caffr., p. 79), kann es nicht sein, wenn ihr wirklich der Hautanhang fehlt; ich habe keinen bemerkt, und da ich kein Ex. der Africanischen Art besitze, so wird das Stockholmer Museum am ersten entscheiden können, ob ich ihn übersehen, oder mit Recht unerwähnt gelassen habe."

(2) "So übergenau auch Wilkinson die Länge der Tasterglieder mass und das Flügelgeäder untersuchte, um die schlechten Guenéschen Genera zu begründen, so hat er doch an der ihm ganz wohl bekannten *Latifasciana* den Hautanhang nicht gesehen."

It may be useful to contrast some of the essential points of the two descriptions.

*Eccopsis*, Zeller (Kong. Svensk. Vetens. Akad., 1852, pp. 79, 80).

Char. essent.—"Alæ posteriores elongatæ margine postico in mare ante angulum analem late exciso

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margine abdominali incrassato." Char. natur.—"Alæ anteriores latæ, in femina acutiores quam in mare, pictura sericoridis; posteriores, *angustæ*, acuminatæ margine postico maris ante angulum analem late et rectangulariter exciso, margine interiore incrassato rigido." "Distinguitur alis posterioribus et in mare et in femina multo angustioribus magisque in apicem productis, atque in mare juxta angulum analem late excisis."

*Exartema*, Clemens (Proc. Ac. Nat. Sci. Phil., 1860, p. 356).

"Fore wings with the costa regularly arched; tip obtuse and rounded; hind margin rounded, very slightly oblique, disc with secondary cell. *Hind wings rather broader than the fore wings*, obtusely angulated on the hind margin opposite the median nervules; inner margin deeply and sharply excised, with a cylindrical appendage along the inner margin from the base, the lower portion of which is free."

The close resemblance of the specimen now before me to the North American species of *Exartema*, both in form and in ornamentation, is remarkable, and it would be interesting to ascertain for certain if the hind wings of the male exhibit any resemblance to the pecular structure which distinguishes that genus; in which case only could Herr Lederer be held to be justified in interpreting the original description of *Eccopsis* as applicable to *venustana*, Hüb., which would probably justify also the substitution by priority of that genus for *Exartema*, Clemens.*

*Eccopsis fluctuatana*, n. s. (Pl. X., fig. 7).

Capite thorace antennis et palpis grisescentibus. Alis anticis costa fluctuata albidis, a basi ad finem cellulæ

* Since writing the above I have received, through the kind assistance of Mr. W. F. Kirby, a slight sketch of the hind wing of the original male specimen of *Eccopsis wahlbergiana*, described by Zeller, for which I am indebted to Mr. C. Aurivillius, Assistant in the Entomological Department of the State Museum at Stockholm. Although the wing is somewhat narrower and more tapering towards the apex than those of the American species of *Exartema*, this sketch tends strongly to confirm the view that the genera *Eccopsis*, Zeller, and *Exartema*, Clemens, are identical.

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fusco adumbratis excepta plaga costali elongata ante medium. Posticis brunneo-fuscis.

Head and thorax greyish; palpi greyish, much shaded on the end of the second joint and on the short apical joint with fuscous. Antennæ greyish. Fore wings (with the costa slightly waved, the apex depressed, the apical margin slightly oblique) whitish, with a strong fuscous patch stretching over nearly two-thirds of their length, having its outer margin oblique and somewhat irregularly defined; an elongated patch of the whitish ground colour running along the costal margin before the middle, extending to the base, surrounded by the fuscous shade, and containing some small fuscous costal spots and streaklets, which are again repeated beyond the middle. Towards the apex is an olivaceous costal shade, and an inconspicuous olivaceous streak crossing from the costa to the middle of the apical margin. Hind wings brownish fuscous, their costal margin whitish. Two females; expanse, 19 mm.

"D'Urban and Spring Vale; to light in garden, September and November."

Having only two female specimens from which to describe this species, it must be somewhat uncertain whether I have rightly placed it in the genus *Eccopsis*. The coloration is almost exactly that of a *Penthina*, but the shape of the wings is remarkably similar to those of the supposed *Eccopsis wahlbergiana*, mentioned above, as well as to those of many species of the North American genus, *Exartema*.*

### Aphelia, *Stephens*.

#### *Aphelia lanceolana*.

*Aphelia lanceolana*, Hüb., Wocke Cat., No. 1006.
*Bactra stagnicolana*, Zell., Handlingar Kong. Svensk. Vetens. Akad., 1852, p. 84.
*Ancylolomia siccella*, Walk., Cat. Lep. Het., B. M., xxxv., p. 1750.

I find in Mr. Gooch's collection three specimens, which do not appear to differ in any greater degree from some of the European varieties of *Aphelia lanceolana*,

* See footnote on preceding page.



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Hüb., than they differ from each other. Prof. Zeller described his *Bactra stagnicolana* from a single specimen in bad condition, as being "lanceolanæ valde affine sed distinctum alis latioribus, margine postico minus obliquo; linea disci postici recta, non arcuata fractave." The remainder of his description could be fitly applied to one of the more distinctly marked varities which occur in this country.

The characters relied upon by Zeller are not sufficiently maintained in the three examples now before me to justify me in regarding the African species as specifically distinct from the common European form, which has also been recorded from North America.

Mr. Walker has inadvertently placed this species among the *Crambidæ*, describing it under the name of *Ancylolomia siccella*. His specimen agrees entirely with English examples of *A. lanceolana*, which tends to confirm the opinion that the African form is merely a variety of this well-known species.

Mr. Gooch's specimens were taken at Spring Vale, in bush; December, March, and April.

### Grapholitha, *Treitschke*.

*Grapholitha spissana*, Zell., Handlingar Kong. Svensk. Vetens. Akad., 1852, p. 82; Walk., Cat. Lep. Het., B. M., xxviii., p. 388.

### Carpocapsa, *Treitschke*.

*Carpocapsa diremptana*, Walk., Cat. Lep. Het., B. M., xxviii. 409, 410.

The specimen in the British Museum, from which Mr. Walker's description was taken, has much the general appearance and structure of the genus *Penthina*, but its condition is too bad to warrant a re-description, although a good specimen of the species might easily be recognised by comparison with it.

### Steganoptycha, *Stephens*.

*Steganoptycha infausta*, n. s. (Pl. X., fig. 8).

Capite, palpis, antennis et thorace brunneo-fuscis subgrisescentibus. Alis anticis elongatis acuminatis,

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margine apicali obliquo, obscure brunneo-fuscis; posticis dilute fusco-griseis.

Head, palpi, antennæ and thorax brownish fuscous, with a slight greyish tinge; the palpi projecting about the length of the head beyond it; antennæ simple. Fore wings elongate-acuminate, with the costa slightly rounded; the apical margin oblique; very slightly indented below the pointed apex; unicolorous dark brownish fuscous. Hind wings about the same width as the fore wings; pale greyish fuscous, cilia the same. Abdomen missing. Expanse, 19 mm.

One male. At D'Urban, taken at light.

### Phoxopteris, *Treitschke.*

*Phoxopteris natalana*, n. s. (Pl. X., fig. 9).

Alis anticis falcatis dilute argillaceis; umbra ferruginea externe prope apicem acuminata et strigulis costalibus ante medium fuscis ultra medium dilute argillaceis; margine apicali peranguste fusco, ciliis argillaceis ferrugineo finitis. Posticis cinereis.

Head pale reddish ochreous; palpi projecting about the length of the head beyond it; the apical joint and the surrounding scales which project from the second joint fuscous; antennæ tinged with ferruginous. Fore wings pale argillaceous, much shaded with ferruginous, which forms an acute angle before the falcate apex, leaving on the space above the anal angle a patch of the plain ground colour: this ferruginous shade contains above the middle of the wing and about the end of the cell a longitudinal reduplicated and somewhat diffused blackish fuscous streak, and below it two or three slender diverging lines of the paler ground colour. On the costa before the middle are five or six small oblique fuscous streaks, beyond the middle is a ferruginous shade interrupted by a series of reduplicated pale streaks each centred with a few dark fuscous scales at the base; the first of these streaks follows the upper edge of the ferruginous discal shade from the middle of the costa nearly to its extreme angle near the apical margin, where it almost joins the point of the last streak nearest to the apex; a slender dark fuscous line indicates the apical margin at the base of the pale cilia, which are

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tipped with ferruginous. Hind wings pale cinereous. Expanse, 15 mm.

One specimen in Mr. Gooch's collection.

TINEIDÆ.

CHOREUTIS, *Hübner*.

*Choreutis bjerkandrella*, Thnb., Wocke Cat., No. 1302.
*Choreutis vibralis*, Zell., 'Isis,' 1847, pp. 23—120.
*Choreutis vibrana*, var. *β. australis*, Zell., 'Isis,' 1847, p. 643.
*Choreutis vibrana*, var. *β. Ephemerid*, Entomol. x. 235.
*Choreutis australis*, Zell., Handlingar Kong. Svensk. Vetens. Akad., 1852, p. 85.

A single specimen in bad condition is in Mr. Gooch's collection, taken at Spring Vale at light in October. After careful comparison I am quite unable to separate it from the common and well-known European species from which Prof. Zeller at first considered his African *Choreutis australis* to be distinguishable. The name "*australis*" appears to be rightly included as a synonym in the European Catalogue of Staudinger and Wocke.

ATYCHIA, *Ochsenheimer*.

*Atychia quiris*, F. & R., Reise d. Nov., pl. cxxxix., fig. 36.

PENESTOGLOSSA, *Rogenhofer*.

(*Psilothrix*, Wocke, nomen bis lectum.)

*Penestoglossa capensis*, F. & R., Reise d. Nov., pl. cxxxix., fig. 31.

SEMIOSCOPIS, *Hübner*.

*Semioscopis ? trigonella*, F. & R., Reise d. Nov., pl. cxxxix., fig. 39.

TIQUADRA, *Walker*.

*Tiquadra goochii*, n. s. (Pl. X., fig. 10).

Capite squamis appressis cinereo-griseis. Antennis fortibus. Palpis recurvis obtusis articulis secundo et tertio fasciculatis. Alis anticis elongatis (costa arcuata, apice et margine apicali rotundatis) canis cinereo-fusco

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irroratis guttatis et fasciculatis. Alis posticis ovatis cinereo-ochraceis, ciliis pallidoribus.

Head with appressed pale greyish fuscous scales, paler in front and beneath. Antennæ rather stout, not ciliated. Tongue none; ocelli none; maxillary palpi none. Labial palpi recurved, dingy whitish, touched with cinereous on their outer sides, with the second joint tufted beneath, the apical joint shorter than the second and concealed in a tuft of coarse scales. Fore wings elongate (with the apex rounded), dingy whitish, thickly irrorated and speckled with cinereous and fuscous dots, especially conspicuous towards the costal and apical margins, with several groups of raised scales, especially noticeable on the basal half. Hind wings rather shining yellowish cinereous, with paler cilia. Hind tibiæ short, incrassated, densely pilose above having the inner and outer spurs of very unequal length. Abdomen missing. Expanse, 32 mm.

Taken in December at light, in Spring Vale.

The earliest description of any species of this genus, so far as I am able to ascertain, is that of *Tiquadra inscitella*, Walk. (Cat. Lep. Het., B. M., xxviii. 519), from Mexico, from which the African species above mentioned differs only in its larger size, its somewhat wider fore wings, and rather darker shade of colouring. They may possibly be found to be not specifically distinct, although coming from such widely separated localities. *Oscella æneonivella*, Walk., from Venezuela, and *Manchana avitella*, Walk., from Santa Martha, the types of which I have examined, are also evidently congeneric.

Prof. Zeller (Hor. Soc. Ent. Ross. xiii., pp. 196—203) has described four species also from South America, establishing for their reception the genus *Acureuta*, Zell., pointing out that two species, figured by Messrs. Felder and Rogenhofer (Reise d. Nov. pl. 138, fig. 46, and pl. 139, fig. 50), placed by these authors in the genus *Scardia*, Tr., belong to the same genus. The two figures referred to evidently represent this very distinct and remarkable form, which furnished Mr. Walker with material for the formation of his three genera, *Tiquadra*, *Oscella*, and *Manchana*; but it is not within the scope of the present paper to determine how many distinct species have actually been described, or how many names should rank only as synonyms.

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The remarkable fact with which we are at present concerned is that a species, differing in no essential particular from the South American representatives of the genus, has been found by Mr. Gooch in South Africa; and this is the more remarkable since it is known to be associated there with *Eustixis flavivittella*, *Eccopsis wahlbergiana*, Zell., and *Compsoctena primella*, Zell., as well as with several species of *Cryptolechia*, whose representatives in the New World are also so nearly allied to them in structure and appearance.

I have received, through the kindness of Mr. H. Doer, of Rio Janeiro, amongst other interesting Lepidoptera, two specimens, which he considered to be male and female of the same species, the female being evidently a species of *Tiquadra*, the male (?) presenting the same peculiarities as the next species, figured and described in this paper under the name *Ischnopsis angustella*. To such a remarkable degree does it approach it that, on finding the same two forms in Mr. Gooch's African collection taken in the same locality and within a few days of each other, I was induced to make some further enquiries into the sufficiency of the evidence from which the suspicion of their relationship to each other had arisen. Mr. Doer is unable to assure me on this point; and as both sexes of *Tiquadra* have been noticed, both by Prof. Zeller and Mr. Walker, I have been compelled to regard the supposition as erroneous, although I have placed them provisionally in juxta-position in systematic order. It is at least a very curious double additional instance of similarity between South African and South American Lepidoptera. Prof. Zeller states that the larva of a species of this genus is a case-bearer.

### Ischnopsis, n. g.

Caput latum; antennæ articulo basali infra ciliato. Palpi labiales porrecti, acuminati; articulo secundo incrassato nec fasciculato; haustellum nullum. Alæ anticæ et posticæ elongatæ, lanceolatæ et acuminatæ; posticæ costa post-medium emarginata; cilia longius-cula. Tibiæ posticæ longæ, supra et infra pilosæ; calcaribus valde inæqualibus.

Head broad; antennæ with the basal joint fringed below. Labial palpi porrected (not recurved), pointed

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the second joint thickened, not tufted. Proboscis none. Fore wings and hind wings elongate, lanceolate, acuminate. Cilia very long. Hind tibiæ long, hairy above and beneath, with the inner spurs a good deal longer than the outer ones.

*Ischnopsis angustella*, n. s. (Pl. X., fig. 11).

Capite sordide cano squamis appressis. Palpis et antennis sordidis. Alis anticis dilute cinereis, griseofusco in longitudine lineatis. Posticis dilute cinereoochraceis antice infuscatis. Ciliis et tibiis posticis dilutioribus.

Head dingy whitish, with appressed scales. Palpi with the second joint slightly thickened, roughly scaled, but not tufted; apical joint not half as long as the second joint. Antennæ simple, three-fourths of the length of the fore wings; the basal joint fringed beneath. Fore wings elongate, acuminate, pale cinereous, with indistinct slender lines of greyish fuscous throughout their length. Hind wings pale cinereous-ochreous, shaded anteriorly with fuscous, elongate, acuminate, the costal margin appressed towards the apex. Cilia paler. Hind tibiæ very densely pilose above. (?) Male. Expanse, 28 mm.

Two examples in Mr. Gooch's collection, taken at light at Spring Vale in January.

EUPLOCAMUS. *Latreille.*

*Euplocamus stupens*, Wallgr., Öf. Af. Kongl. Vet. Akad. För., 1875, Arg. 32, pp. 127, 128.

*Euplocamus horridellus.*

*Tinea horridella*, Walk., Cat. Lep. Het., B. M., xxviii. 474.

This large and distinct species is represented in Mr. Gooch's collection by nine specimens, varying greatly in size, the largest reaching an expanse of 32 mm., the smallest only 18 mm. I have a specimen in my own collection, given to me by Mr. Druce, from Bedford, South Africa. It is rather remarkable that so conspicuous an insect, and one which appears to be not

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uncommon, should not have been contained in the collections described by Prof. Zeller and Mr. Stainton, but I have been unable to recognise it in any of their descriptions. Its upturned palpi, with the second joint roughly clothed with projecting coarse scales, separate it from the true *Tineæ*. It differs in this respect from *Tinea vastella*, Zell., which was originally placed in the genus *Euplocamus* (subgenus *Scardia*) by Prof. Zeller, although not so by Mr. Stainton.

Taken in October, November, and December, at light, in Spring Vale.

TINEA, *Zeller*.

*Tinea vastella*.

*Euplocamus* (*Scardia*) *vastellus*, Zell., Handlingar Kong. Svensk. Vetens. Akad., 1852, p. 88; Haliday, Nat. Hist. Rev., vol. iii., Proc. Dublin Zool. Assn., December 21, 1856, p. 23, pl. i.

*Scardia vastella*, Walker, Cat. Lep. Het., B. M., xxviii. p. 463.

*Tinea gigantella*, Stainton, Trans. Ent. Soc. Lond., n. s., 1867, vol. v., p. 221; Trans. Ent. Soc. Lond., 3rd ser., vol. v., part 8, p. cv.; Wallengren, Öf. Af. Kongl. Vet. Akad. För., 1875, Arg. 32, p. 128; Proc. Ent. Soc. Lond., 1878, p. li.; Ent. Mon. Mag., vol. xv., p. 133; Walk., Cat. Lep. Het., B. M., xxxv., p. 1812.

*Tinea lucidella*, Walk., Cat. Lep. Het., B. M., xxx., p. 474.

Two examples of this interesting species, varying in the expanse of the fore wings from 28 to 32 mm., are in Mr. Gooch's collection. I have received it also through the kindness of Mr. H. Druce, whose specimens were collected at Bedford in South Africa. Professor Zeller's original description contains no allusion to the habits of the larva, and I have had some difficulty in tracing the evidence upon which the identity of this species, with the horn-feeding larva of South Africa, has been generally accepted.

Mr. Kirby has called my attention to what appears to be the earliest mention of the habits of this larva in the 'Natural History Review,' vol. iii., 1856, where, at p. 23 of the Proc. of the Dublin Zool. Association, I find the following:—

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"Mr. Haliday made some remarks on two pairs of antelope's horns, exhibited to the meeting by J. M. Neligan, M.D. These horns—belonging, one pair to *Oreas canna* (pl. i., fig. 3), the other to *Kolus ellipsiprymnus*—were brought home from the Gambia by J. Fitzgibbon, Esq., M.D., who lately purchased them from some natives in the market at Macarthy's Island, being struck with their appearance, as they were perforated by grubs enclosed in cases which projected abundantly from the surface of the horns, although these were taken from freshly-killed animals, the blood not having dried up on them when brought to market."

When first examined by Dr. Neligan, at Dublin, they contained "larvæ plump and fresh;" but when Mr. Haliday first saw them they were "shrivelled up." The largest is described as "nearly an inch long, with the body of a pale colour, without distinguishable markings; the head, the terminal segment, the legs, the ring of the prothoracic spiracles, and the hooklets of the prolegs, dark chestnut, tending to black on the head." The structure is described as "not inconsistent with the probability that it belonged to some of the *Tineidæ*." "The most remarkable point was the evidence that the horns had been thus infested while the animal was yet living which bore them."

"The President showed some horns of the Gayal, from University Museum, more extensively perforated by a similar larva."

It will be observed that on this occasion no specimens of the perfect insect were obtained.

On the 6th of November, 1878, Mr. Stainton exhibited, at the meeting of this Society, specimens of "a *new* horn-feeding *Tinea* (*T. orientalis*), reared from horns from Singapore, allied to the *well-known large species* from South Africa, of which the larvæ fed in the horns of living buffaloes and antelopes, and *which had been described* by Zeller under the name of *Vastella*, and subsequently by himself under the name *Gigantella*." "Mr. Simmons, of Poplar, who found them in his greenhouse, was quite at a loss to account for their appearance, till Mr. Stainton suggested they were horn-feeders, when he remembered a piece of horn placed on a shelf and forgotten, but which, when examined, showed evident traces of having been eaten, and from which pupa-skins had been obtained."



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The description of *Tinea orientalis* was published with full particulars in Ent. Mo. Mag., xv. 133.

On reading this report of the meeting I instituted a diligent search for the description of the habits of *Scardia vastella*, Zell. The only further allusion to a horn-feeding *Tinea* larva which I could find was in the Proc. Ent. Soc. Lond., 1867, p. cv., where Mr. Stainton "records a new habit for the larva of a *Tinea*. Mr. Swanzy had shown him the larva-case of a *Tinea* which was taken from the horn of a Kooloo, from Natal, and there could be little doubt that the larva must have been burrowing in the horn of the living animal." Mr. Swanzy added, "that since Mr. Stainton's visit he had found a living larva in the horn."

"Mr. Trimen had seen the skull of a harte-beest, the base of which was eaten by what he had no doubt was the larva of a *Tinea*."

Being unable to find any published reference of the African horn-feeding larva to the species described by Zeller and Stainton, I referred the question to Mr. Stainton for his kind assistance. In a letter, dated December 16th, 1880, which I gratefully acknowledge, he writes:—

"I suspect that the identity of the horn-feeding *Tinea* and *T. vastella* has never appeared in print. I enclose you extracts from my correspondence with Zeller on the subject; he evidently then thought that Rogenhofer, of Vienna, was going to write on the subject, which possibly he never has done."

From these extracts I gather that in 1873 Professor Zeller received from Herr Rogenhofer one male and two females, with two larvæ and one pupa of a moth, the caterpillar of which lives in the horns of buffaloes at the Cape, the specimens agreeing exactly with *Scardia vastella*, Zell., and that he took them to be identical with a species which is common at the Cape in rotten bones.

In a subsequent letter, discussing the geographical distribution of the species, Prof. Zeller writes:—

"Somit bleibt Südafrica das Vaterland, wenn die Art nicht künstlich verpflanzt wird, was ich für gut ausführbar halte; nur wird der Aufenthalt wahrscheinlich nicht anderswo sein können, als wo unverarbeitete Hörner von Wiederkäuern aufbewahrt werden. Das die Raupe am gesunden Horn des lebenden Thieres vorkomme, ist nur nicht recht wahrscheinlich; ich nehme den faulenden

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Kopfknochen, wovon noch Reste am Horne sitzen, als das eigentliche Futter an."

It is probable that this unpublished correspondence was the cause of Mr. Stainton's suggestion to Mr. Simmons, in 1878, that the large *Tinea* found in his conservatory at Poplar was possibly a horn-feeder.

I have in my own collection a pair of horns of *Kolus ellipsiprymnus*, given to me by the late Col. Harvey Tower, which are bored by the larvæ of this species, the substance of the horn itself being visibly perforated in several places up to one-fourth from the base; the pupa-cases protruded from the holes when I received them. The small portion of the skull still attached to the horns is not perforated, but has the appearance of having been much exposed, conveying the impression that the specimen may have been obtained by purchase, rather than killed in the course of Col. Tower's hunting expedition. I have also a very old pair of horns of an Indian buffalo, perforated in the same manner.

I am informed by Lieut.-Col. the Hon. Wenman Coke, who has shot very large numbers of various species of horned animals in South Africa, that he has never seen the horn of a living animal perforated by one of these larvæ, although almost every dead horn that has been exposed to the open air is found to be attacked by them. He has not observed any traces of similar larvæ in the neighbourhood of Zanzibar or Lake Nyassa, where he has also hunted; but it seems extremely probable that it may also occur there.

Colonel Coke is most confident that the larva never attacks a living animal; he assures me that had this been the case it could not have escaped his observation.

Mr. Roland Trimen, to whom also I have spoken on the subject, concurs in expressing great doubt as to the correctness of the theory that the larva feeds in the horns of living animals; on the other side, we have the strong evidence of Dr. Fitzgibbon; and as the fibrous substance of the horn undergoes little or no change at the death of the animal, there seems to be no reason why the moth should not deposit its eggs when the living animal is at rest, nor why the larva should not penetrate the horn; but the question must be considered to be "sub judice."

Mr. Walker has described this species under the name of *Tinea lucidella*.

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Mr. Gooch's specimens were "taken at Spring Vale in December among trees."

Since writing the above I have been informed that some specimens of this species have been reared in England from the hoof of a horse lately brought from Zululand. (Proc. Ent. Soc. Lond., 1881, p. viii.)

*Tinea abactella*, Walk., Cat. Lep. Het., B. M., xxviii. 476.

The specimen from which Mr. Walker's description was taken is in such bad condition as to be utterly unrecognisable.

*Tinea incultella*, Walk., Cat. Lep. Het., B. M., xxx. 1003.

*T. purpurea*, Stn., Trans. Ent. Soc. Lond., n. s., vol. v., p. 221; Walk., Cat. Lep. Het., B. M., xxxv. 1812.

*T. fuscipunctella*, Haw., Wocke Cat., No. 1404.
*T. abligatella*, Walk., Cat. Lep. Het., B. M., xxviii. 476.
*T. ignotella*, Walk., Cat. Lep. Het., B. M., xxx. 1003.

Having carefully examined the typical specimens described by Mr. Walker under the above names, I am unable to separate them from the common European *T. fuscipunctella*, Haw.

*Tinea farraginella*, Zell., Handlingar Kong. Svensk. Vetens. Akad. 1852, pp. 90, 91; Walk., Cat. Lep. Het., B. M., xxviii. 473.

*T. damnificella*, Zell., Handlingar Kong. Svensk. Vetens. Akad. 1852, p. 91; Walk., Cat. Lep. Het., B. M., xxviii. 473.

*Tinea ? erinacea* (Pl. XI., fig. 12).

*Tinea erinacea*, Walk., Cat. Lep. Het., B. M., xxviii. 475.

It seems desirable to add to Mr. Walker's description some further observations founded upon a careful examination of this most curious insect.

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The word "Mas" at the commencement of Mr. Walker's Latin description is evidently a mistake, the specimen being correctly described in English as a "Female," and as having its "oviduct exserted." It possesses such peculiarities as might perhaps with good reason be considered to distinguish it as the type of a new genus; but I shall confine myself for the present to a short re-description of the single example in the British Museum, which appears to differ in the character of its ornamentation from any known Lepidopterous insect.

Head rough, pale cinereous; palpi short, scarcely projecting beyond the coarse frontal scales. Antennæ simple, nearly as long as the fore wings. Tongue not visible. Maxillary palpi obsolete. Fore wings subovate, elongate, with the apex slightly rounded, shining, very pale yellowish cinereous, streaked with greyish fuscous, the apex having a bright ferruginous tinge. About the surface of the fore wings are scattered several pale whitish straw-coloured tufts of elongate hair-like scales, perhaps best described by the German "haar pinsel." These are distributed as follows:—Four immediately below the costal margin, of which one is about one-third from the base, one about the middle, one rather beyond the middle, and one on the apical third; below these are two at the end of the cell, one above the other, one on the middle of the cell, and one immediately below and before the apex; about four others are ranged immediately above the dorsal margin. Some of these hair pencils are as much as two millimetres in length, and Mr. Walker adds, from Mr. Gueinzius' MSS., "This moth carries the bristles of the wings erect when alive." The cilia are very long; the hind tibiæ clothed with long hairs on both sides; the ovipositor extruded to one-fourth the length of the abdomen.

*Blabophanes longella.*

*Tinea longella*, Walk., Cat. Lep. Het., xxviii., p. 479.
*Blabophanes longella*, Butler, Ann. Mag. Nat. Hist., April, 1881.

Two specimens in Mr. Gooch's collection agree with this Northern Indian species described by Mr. Walker, except in the colour of their heads, which, as noticed by Mr. Butler (*l. c.*), are more decidedly yellow.

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Mr. Gooch writes of this species :— " Spring Va
Bred in skins in the verandah. Came to light Februar

*Blabophanes speculella.*

*Tinea* (*Blabophanes*) *speculella*, Zell., Handlingar Ko
Svensk. Vetens. Akad. 1852, p. 89; Walk., C
Lep. Het., B. M., xxviii. 474.

*Blabophanes rejectella.*

*Tinea rejectella*, Walk., Cat. Lep. Het., B. M., x
1003.

? *Blabophanes pellucida*, Wallgr., Öf. Af. Kongl. V
Akad. För. 1875, p. 128.

Three specimens in Mr. Gooch's collection correspo
precisely with the type in the British Museum, wh
seems to differ from Mr. Stainton's *Tinea rutilicost*
in much the same particulars as those stated by H
Wallengren as separating his *Blabophanes pellu*
from that species.

*Blabophanes rutilicostella.*

*Tinea rutilicostella*, Stn., Trans. Ent. Soc. Lond., n.
vol. v., p. 221; Walk., Cat. Lep. Het., B.
xxxv. 1812.

Nemophora, *Hübner.*

*Nemophora* (*Nemotopogon*) *crinigerella*, Zell., Lin. E
v. 347; Handlingar Kong. Svensk. Vetens. Ak
1852, p. 92; Walk., Cat. Lep. Het., B.
xxviii. 497.

Mr. Gooch's collection contains one specimen.

*Nemophora elongatella*, n. s. (Pl. XI., fig. 13).

Capite thorace et antennis cum alis anticis perel
gatis, dilute albido-cinereis puncto ad finem cell
punctisque, marginalibus sex costalibus septem apic
bus cinereis, aliis minoribus cum squamis concolori
undique dispersis.

Head, thorax, and antennæ whitish drab; the anten
nearly three times the length of the fore wings. F

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wings much elongated, fully four times as long as wide, pale whitish drab, with a series of small cinereous marginal spots, of which six are costal, being placed gradually closer to each other as they approach the apex, and seven or eight others are on the apical margins reaching round to the anal angle; a spot of a similar colour lies at the end of the disc, and several smaller cinereous dots and scales are scattered more or less conspicuously over the surface of the wing; hind wings scarcely shining, very pale cinereous. Expanse, 19 mm.

Two males.

"D'Urban (West Park); in bush, afternoon, July."

*Nemophora turpisella*, Walk., Cat. Lep. Het., B. M., xxviii., p. 497.

Mr. Gooch's collection contains six specimens of this species. I have also a specimen in my own cabinet from Bedford, S. Africa, for which I am indebted to the kindness of Mr. Herbert Druce.

The base of the costal margin of the fore wings is distinctly brown, the "three irregular brown lines" described by Mr. Walker forming oblique disintegrated fasciæ, tending outwards from the dorsal to the costal margin. Hind wings brownish, much darker than in the following species.

These came to light at Spring Vale in November and December.

*Nemophora alternipunctella*, n. s. (Pl. XI., fig. 14).

Capite albo subfusco irrorato; antennis quam alis anticis ter longioribus albidis. Alis anticis albis, brunneo-fusco profuse punctatis et maculatis. Striga angusta in basi costæ, maculis tribus costalibus tribus dorsalibus alternantibus brunneo-fuscis. Posticis dilute subochraceo-cinereis dimidio postico ciliorum dilutiore.

Head white, speckled with fuscous. Antennæ dingy whitish, three times the length of the fore wings. Fore wings rounded, white, profusely dotted with brownish fuscous, with a narrow brownish fuscous streak along the base of the costa, and three costal and three dorsal brownish fuscous spots placed alternately, each dorsal spot being placed before the corresponding spot on the

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costa. The third dorsal spot near the anal angle i slightly projected upwards, the second and third costa spots somewhat elongate and inverted; a few fuscou scales appear to mark an obsolete oblique fascia-lik streak between the first dorsal and the first costal spot Hind wings very pale yellowish cinereous, the outer hal of the cilia being even paler. In one variety in my ow collection the first dorsal spot is joined to the first costa and the third dorsal to the second costal. Expans 18—19 mm.

One specimen in the British Museum from Sout Africa, collected by Mr. Wilson.

*Nemophora trigoniferella*, n. s. (Pl. XI., fig. 15).

Capite et thorace albis; antennis annulatis. Al anticis albis, margine costali æneo-brunnea, apicali aure flavo, linea in basi ciliorum brunnea; plaga majo dorsali elongato triangulare æneo-brunneo, et strigul supra angulum analem cum aliis costalibus per linea argenteam connexis chalybeo-brunneis. Ciliis albid dimidio exteriore æneo-brunneo.

Head and thorax white; palpi short and slender, n reaching beyond the face. Antennæ three times t length of the fore wings, annulated, with the basal joi thickened and hairy. Fore wings white, the cost margin conspicuously shaded with golden bronzy scale a large elongate clearly-defined bronzy-brown pat commencing near the base of the dorsal margin, i creasing in width somewhat abruptly at its commenc ment, then gradually, until it forms an acute angle abo and beyond the middle of the wing, and ends abrupt somewhat beyond the middle of the dorsal margin, i outer edge being scarcely oblique, the apical marg golden yellow, with a bronzy-brown line at the base the cilia, and three or four bluish bronzy streaks pointi inwards immediately above the anal angle, connect with three bronzy brown costal spots by a silve metallic streak. Cilia whitish, tipped with bronzy brow Hind wings shining pale bronzy brown. Expans 16—17 mm.

Two males in Mr. Gooch's collection.

I should not have ventured to describe this speci from the two greatly damaged specimens in Mr. Gooch

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collection had it not been so remarkably distinct from any other known species in this or any allied genus, and thus, I hope, easily distinguishable, in spite of some probable imperfections in the description.

### Ceromitia, *Zeller.*

*Ceromitia Wahlbergi*, Zell., Handlingar Kong. Svensk. Vetens. Akad. 1852, pp. 93, 94; Stn., Trans. Ent. Soc. Lond., n. s., vol. v., p. 222; Walk., Cat. Lep. Het., B. M., xxx., pp. 506, 507.

There are four specimens of this beautiful and distinct species in Mr. Gooch's collection, taken in "October, November, and December at light." I received it also from Natal through the friendship of the late Colonel Harvey Tower, Coldstream Guards.

### Adela, *Latreille.*

*Adela natalensis*, Stn., Trans. Ent. Soc. Lond., n. s., vol. v., p. 221; Wlsm., P.Z.S. Lond., 1880, 78.

*A. albicornis*, Walk., Cat. Lep. Het., B. M., xxviii., pp. 501, 502.

Three specimens of this species are in Mr. Gooch's collection. As Mr. Stainton has remarked, it is very distinct from any other known species of *Adela*.

### *Adela ? electella.*

*Micropteryx ? electella*, Walk., Cat. Lep. Het., B. M., xxviii., p. 495.

Mr. Walker's type of *Micropteryx ? electella* is glued to a card with the wings laid back unspread. Its antennæ are rather longer than the fore wings, a character which would at once suffice to separate it from the genus *Micropteryx*, to which it certainly does not belong. Its purple fore wings, with a distinct yellowish white transverse fascia, remind one very strongly of *Adela natalensis*, Stn., but its much smaller size and the absence of a pale costal spot distinguish it from that species, even if it may be rightly included in the same genus.

I am not aware that the female of *A. natalensis* has yet been observed, but, although the difference between the sexes of the *Adelidæ* are in some cases remarkable,



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there is no evidence at present to support a conjecture that *Adela ? electella* may prove to be the female of *A. natalensis*; indeed, the great difference of their respective sizes renders it at least improbable, but, in view of their similarity, it is worthy of notice that the specimen is mounted in such a way as to render it apparently impossible to determine its sex, although Mr. Walker considered it to be a male; and moreover, that his examples of *A. albicornis*, which (as I pointed out in the 'Proceedings of the Zoological Society,' London, February, 1880, p. 78), is a synonym of *Adela natalensis*, Stn., were received in the same collection and from the same locality as his *Micropteryx ? electella*.

HYPONOMEUTA, *Zeller*.

*Hyponomeuta africanus*, Stn., Trans. Ent. Soc. Lond., n. s., vol. v., p. 222; Walk., Cat. Lep. Het., B. M., xxxv., p. 1824.

*Hyponomeuta subplumbellus*, n. s. (Pl. XI., fig. 16).

Capite palpis et antennis plumbeis. Thorace plumbeo, maculis quinque nigris in margine dispositis. Alis anticis angustis elongatis subnitentibus punctis nigris seriatim dispositis quinque sub costa ultra medium productis quinque supra plicam et quinque supra marginem dorsalem minus extensis; aliis minoribus ante apicem singulis. Posticis plumbeo-cinereis quam anticis vix latioribus.

Head, palpi, and antennæ lead-colour, the face slightly paler. Thorax lead-colour, with five black spots, two on each side, and one at the back. Fore wings lead-colour, slightly shining, with three rows of about five small black dots, one below the costa reaching beyond the middle, and one on each side of the fold reaching scarcely beyond the middle, one or two smaller black dots beyond the end of the cell. Hind wings slightly wider than the fore wings, leaden grey (not black). Expanse, 18 mm.

One specimen in Mr. Gooch's collection.

This species is nearly allied to *Hyponomeuta viginti-punctatus*, Retz., but the fore wings are narrower and more elongate, the spots smaller and not so numerous;

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it is also somewhat similar in the arrangement of its spots to *Hyponomeuta fumigatus*. Zeller. The most noticeable points of Professor Zeller's description, which, in addition to its larger size, seem to separate his species from the one before us, are as follows:—"Alæ anteriores fumidæ *sine ullo nitore*," "alæ posteriores *multo latiores*," "*nigræ*."

*Hyponomeuta fumigatus*, Zell., Handlingar Kong. Svensk. Vetens. Akad., 1852, pp. 101, 102; Stn., Trans. Ent. Soc. Lond., n. s., vol. v., p. 222; Walk., Cat. Lep. Het., B. M., xxxv., p. 1824.

*Hyponomeuta strigillatus*, Zell., Handlingar Kong. Svensk. Vetens. Akad., 1852, p. 102; Walk., Cat. Lep. Het., B. M., xxviii., p. 531.

*Hyponomeuta perficitellus*. (Pl. XI., fig. 17).

Walk., Cat. Lep. Het., B. M., xxviii., pp. 531, 532.

Represented in Mr. Gooch's collection by a single specimen. It agrees very closely with Professor Zeller's description of the preceding species, *H. strigillatus*, in which, however, some of the spots would appear to be connected in the form of streaks. The "fovea pellucida valde insignis" of the hind wings mentioned by Zeller is particularly noticeable also in this species.

PSECADIA, *Zeller*.

*Psecadia circumdatella*.

*Hyponomeuta circumdatellus*, Walk., Cat. Lep. Het., B. M., xxviii., p. 532.

*Psecadia circumdatella*, Zell., Hor. Soc. Ent. Ross., xiii. 235.

*P. livida*, Zell., Handlingar Kong. Svensk. Vetens, Akad., 1852, pp. 103, 104; Walk., Cat. Lep. Het., B. M., xxviii., p. 537.

There are several specimens of different sizes in Mr. Gooch's collection which, without doubt, belong to this species. They were taken at light at Spring Vale in October. Two of these are of a paler, more yellowish, variety than the others, but cannot be considered distinct. The species seems to be at least allied to the genus

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*Azinis*, Walk., in which the abdominal margin of the hind wing is considerably widened and extended.

*Psecadia languida.*

*Psecadia* (*Coptoproctis*) *languida*, Zell., Handlingar Kong. Svensk. Vetens. Akad., 1852, pp. 105, 106.

*P. languida*, Walk., Cat. Lep. Het., B. M., xxviii., p. 537.

*Psecadia rufiventris.*

*Psecadia* (*Gymnogramma*) *rufiventris*, Zell., Handlingar Kong. Svensk. Vetens. Akad., 1852, pp. 104, 105.

*P. rufiventris*, Walk., Cat. Lep. Het., B. M., xxviii.. p. 537.

EUSTIXIS, *Hübner.*

*Eustixis flavivitella*, n. s.

Capite flavo antennis flavidis articulo basali carnoso, palpis brevibus; haustello mediocre nudo. Thorace flavo, postice carnoso tincto. Alis anticis roseo-carnosis. Striga dorsali a medio basi ante angulum analem antice oblique projecta flava. Posticis subroseis.

Head yellow; palpi yellowish, touched with rosy pink. Antennæ yellow, the basal joint rosy flesh-colour. Thorax yellow, tinged with rosy flesh-colour posteriorly, and on the middle of the patagia. Fore wings bright rosy flesh-colour, with a yellow streak commencing at the middle of the base, leaving a small rosy space at the extreme base of the dorsal margin below it, beyond which it follows the dorsal margin nearly to the anal angle, throwing up an outwardly oblique attenuated projecting streak beyond the middle of the wing. Hind wings, cilia, and abdomen rosy pink. Hind legs yellowish, the first pair strongly tinged with rosy flesh-colour. Under side of fore wings bright rosy red; hind wings paler. Expanse, 19 mm.

One specimen from Bedford, South Africa, given to me by Mr. H. Druce. I find other specimens at the British Museum, from the Cape, labelled "*intactella*" in Mr. Walker's handwriting, but apparently undescribed by him.

This is another remarkable instance of similarity between African and American genera. The genus

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*Eustixis* of Hübner is easily recognisable by his figure of the North American *Eustixis pupula* in the 'Sammlung exotischer Schmetterlinge Zuträge,' figs. 489, 490. This species was subsequently described by Walker under the name of *Mieza subfervens*, and placed by him among the *Lithosidæ*. Messrs. Grote and Robinson (Cat. Lep. N. Am., 1868), restored to it the generic name *Eustixis*, under which it was figured by Stretch ('Zygænidæ and Bombycidæ, N. Am.,' Pl. vii., fig. 17), still among the *Lithosidæ*. Zeller then re-described it as *Enæmia psammitis*, rightly regarding it as allied to the genus *Psecadia*, among the *Tineidæ* (in the subdivision *Hyponomeutina*). The African species, although specifically distinct, is undoubtedly congeneric with those of North America.

DEPRESSARIA, *Haworth.*

*Depressaria trimenella*, n. s. (Pl. XI., fig. 19).

Capite subochraceo, capillis fuscis; palpis subochraceis, articulo apicali fusco bicincto, apice extremo fusco. Alis anticis dilute ochraceis subbrunneo partim suffusis. Plaga costali post medium versus apicem projecta nigricante, puncto nigro discali nonnunquam attingente punctis parvis in costa et in margine apicali nigricantibus. Posticis dilute cinereis.

Head and thorax pale ochreous, the raised scales on the crest touched with fuscous. Palpi pale ochreous, the second joint touched with fuscous on its outer side, the apical joint with two fuscous rings, its extreme apex also touched with fuscous. Antennæ tinged with fuscous. Fore wings pale ochreous, partly suffused with a pale brownish shade, especially on the lower half of the wing before the middle, at the extreme end of the cell, and immediately above the anal angle. A large blackish patch commences at the middle of the costa, and is continued more than half-way to the apex, extending nearly half across the wing, where it ends at its inner angle in a conspicuous black spot, preceded by some detached black scales (the spot is absent in the smaller specimens). Before this patch are three or four blackish spots on the costa, other smaller ones being distributed around the apical margin. Hind wings pale cinereous. Expanse, 11—20 mm.

Four specimens in the Gooch collection, one of which was taken at light at Spring Vale in January.

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*Depressaria ? acerbella.*

*Depressaria acerbella*, Walk., Cat. Lep. Het., B. M., xxix., p. 564.

The typical specimen has lost its body and palpi; a redescription of it would, therefore, be useless. It does not appear to me to belong to the genus *Depressaria*, but, for the reasons above stated, it would be rash to suggest to what genus it might more properly be transferred.

ENICOSTOMA, *Stephens*

*Enicostoma coarctata*, n. s. (Pl. XI., fig. 20).

Capite antennis et palpis obscure fusco-griseis, palpis articulo secundo supra squamis elongatis subfasciculato, fusco-griseis. Alis anticis fusco-griseis, punctis duobus scabris ante medium uno in cellula, uno in plica nigris. Posticis quam anticis vix dilutioribus.

Head, thorax, antennæ, palpi, and fore wings dark fuscous-grey, the palpi with the second joint thickened on the upper side, with a somewhat appressed tuft of long scales slightly more developed than in the allied European species, *Enicostoma lobella*, W. V.; the apical joint slender, acuminate, recurved. Fore wings narrower than in *E. lobella*, of nearly the same dark fuscous-grey colour, but with only two raised dots of blackish scales, one on the disc before the middle, the other on the fold straight below it. In one specimen is a faint indication of a third spot towards the end of the cell. Hind wings and abdomen scarcely paler than the fore wings. Expanse, 15 mm.

One specimen from Spring Vale.

CRYPTOLECHIA, *Zeller.*

*Cryptolechia stramineella.* (Pl. XI., fig. 21).

*Cryptolechia stramineella*, Zell., Handlingar Kong. Svensk. Vetens. Akad., 1852, p. 107.

*Cryptolechia straminella*, Walk., Cat. Lep. Het., B. M., xxix., p. 745.

(Nec *C. straminella*, Walk., Cat. Lep. Het., B. M., xxix., p. 722.)

There are five specimens of this species in Mr. Gooch's collection. It is especially interesting, as being the

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typical species for which Professor Zeller originally founded the genus *Cryptolechia*. The acute apex of the fore wings conspicuously distinguishes it from the great majority of American species which have since been included in this genus by Zeller himself, as well as by other authors. It may be well to trace the history of the genus, which will amply account for the somewhat cumbrous proportions to which it has now attained.

In 1852 (Handlingar Kong. Svensk. Vetens. Akad., p. 106), in a paper entitled "Microptera Caffrariæ," Professor Zeller thus characterised the genus *Cryptolechia* :—

"Char. essent.—Alæ latæ, anteriores *acutangulæ*. Abdomen convexum, superne non marginatum, in mare utrinque ciliatum, ciliis deflexis. Char. natural.—Capilli depressi, in occipite interdum suberecti. Ocelli nulli. Antennæ setaceæ, alis anterioribus breviores, in mare pubescentes, vel ciliatæ. Palpi maxillares breves, tenues, acuti, conniventes. Palpi labiales recurvi; thorace longiores articulo secundo compresso, subtus laxe squamato vel piloso terminali setaceo, lævigato, acuto. Haustellum breve. Abdomen convexum, superne non marginatum, pilis lateralibus in mare longioribus pendulis *marginem ventralem formantibus*. Alæ latæ *anteriorum apex acutus*, angulus dorsalis distinctus, sed rotundatus; posteriorum margo posticus ante apicem convexus ante angulum analem non sinuatus."

Subsequently, in the 'Linnæa Entomologica,' vol. ix., pp. 353, 354, he re-characterised the genus *Cryptolechia* thus :—

"Char. essent.—Palpi longi reflexi corniformes. Antennæ abdominis longitudine, ♂ ciliatæ. Alæ aut costa prope basim convexa, posteriores latæ costa, ♂ simplice, margine postico ante apicem retuso breviter ciliatæ. Abdomen dorso carinato convexum. Char. naturalis.—Caput squamis decumbentibus, ocellis nullis, oculis majusculis. Antennæ abdominis longitudine vel longiores, articulis confertis, ♂ ciliatæ. Haustellum mediocre, basi squamata. Palpi maxillares breves filiformes conniventes. Palpi labiales, thorace longiores, reflexi, modice incrassati, articulo terminali setaceo acuminato. Pedes mediocres, tibiæ posticæ in dorso longius pilosæ, calcaribus validis. Abdomine modice longum, convexulum, dorso distincte carinatum, postice planum ac subcoarctatum, fasciculo ♂ anali mediocri.

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Alæ anteriores latiusculæ, tortriciformes, costa prope basim convexa postice rectilinea vel modice convexa, *apice acuto vel obtuso vel obtuse rotundato*; venæ simplices. Alæ posteriores *amplæ*, breviter ciliatæ, costa vix convexula, margine postico ante apicem impresso, venis simplicibus."

This considerable extension of the distinguishing characters of the genus enabled him to include in it such forms as that of *Cryptolechia sesquitertia*, Zell. (Lin. Ent. ix., pl. 111, f. 20), an insect apparently differing more widely from the original African type than from the allied genera, *Auxocrassa*, *Mesoptycha*, and *Antœotricha*, also then for the first time defined by the same author.

Mr. Walker (Cat. Lep. Het., B. M., xxix., p. 722), has described another species of this genus from Ega under the name *Cryptolechia straminella*, Walk., and subsequently, in the same volume of his 'Catalogue' (p. 745), has spelt the name of Zeller's African species in the same way, whereas it was originally spelt "*stramineella*." The distinction is scarcely sufficient to justify the retention of Mr. Walker's name for the South American species, which in any future revision of the genus should certainly be re-christened.

*Cryptolechia obliquella*, n. s. (Pl. XI., fig. 22).

Capite palpis et antennis lacteis. Thorace lacteo-brunneo bimaculato. Alis anticis lacteis, macula in basi costæ, fascia basali, fascia mediali late reduplicato cuneiforme, et fascia anguste prope marginem apicalem, brunneis; ciliis lacteis. Alis posticis lacteo-cinereis. Apud apicem costæ subobsolete bistrigalis.

Head, palpi, and antennæ creamy white. Thorax creamy white, with two brownish spots or streaks. Fore wings with the costa slightly arched, the apical margin oblique; apex somewhat acuminate, creamy white, with a brown spot at the extreme base of the costa, a narrow brown fascia near the base slightly curved outwards. A wide reduplicated brown wedge-shaped fascia occupying two-thirds of the costal and one-half of the dorsal space beyond the middle of the wing, its central space showing the pale ground colour in more or less amalgamated longitudinal streaks; its inner edge straight, its outer edge obliquely parallel to the apical margin; before this running from the apex to within the anal angle

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is another narrow brownish oblique fascia. Cilia creamy white. Hind wings and cilia whitish cinereous, with two subobsolete brownish costal streaks before the apex. Expanse, 15 mm.

Three specimens. "Spring Vale and D'Urban, July, September, and October."

This insect has the palpi of a *Cryptolechia*, but the form of its wings is so different from that of the majority of species, from various parts of the world, which have been placed in this genus by different authors, that I should have hesitated to include it among them had I not been able to compare it with specimens of the preceding species, from which Professor Zeller originally characterised the genus; from these it cannot be considered generically distinct.

*Cryptolechia castella*, Zell., Handlingar Kong. Svensk. Vetens. Akad. 1852, pp. 107, 108; Walk., Cat. Lep. Het., B. M., xxix. 745.

*Cryptolechia eariasella*, Walk., Cat. Lep. Het., B. M., xxix. 746.

*Cryptolechia hæresiella*, Wallgr., Öf. Af. Kongl. Vet. Akad. För., 1875, Arg. 32, pp. 128, 129.

*Cryptolechia dilutella*, n. s. (Pl. XI., fig. 23).

Capite (capillis aliquot hirsutis), palpis antennis et thorace dilute albido-ochraceis. Alis anticis dilute albido-ochraceis, punctis duobus in cellula tertio postice in plica, et serie arcuata punctorum ante marginem apicalem subobsoletis fuscescentibus, serie in margine apicali paulo distinctiore. Squamis elongatis prope basi marginis dorsalis in penicillo appresso collectis. Posticis dilute cinereis, ciliis dilutioribus.

Head rather rough, together with the thorax, palpi, and antennæ pale whitish ochreous. Fore wings pale whitish ochreous, the costa very faintly and narrowly shaded with ochreous; a small patch of elongated scales on the dorsal margin near the base, forming an appressed tuft, a small fuscous discal spot a little above the middle of the wing at one-fourth from the base, followed by another nearly obsolete spot towards the end



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of the cell, situated in the middle of a narrow oblique subfuscous shade; beneath these two, and equidistant from each, is another indistinct spot on the fold. Halfway between the end of the cell and the apex is a semicircular series of almost obsolete fuscous dots running nearly parallel to the margin of the wing, and on the apical margin itself is a series of rather more distinct but scarcely larger dots of the same colour; a very minute fuscous shade on the extreme apex of the costa. Cilia concolorous with the wing. Hind wings pale cinereous, with very pale cilia. Expanse, 17 mm.

One specimen in Mr. Gooch's collection.

*Cryptolechia atropunctella*, n. s. (Pl. XI., fig. 24).

Capite thorace et palpis albis immaculatis, antennis paulo infuscatis. Alis anticis albis apice rotundato, costa peranguste substraminea punctis tribus discalibus atris quorum secundum primo oblique subjacet, tertio ad finem cellulæ, serie punctorum minorum in margine apicali. Posticis dilutissime griseo-albidis subnitentibus.

Head and thorax white; the palpi white, having the third joint almost as long as the second, which is but slightly thickened. Antennæ white at the base, somewhat tinged with fuscous beyond. Fore wings with the apex much rounded, white, the costa very narrowly tinged with straw-colour, especially towards the apex. Two black discal spots before the middle, the upper one being the nearest to the base, a third black spot lying at the end of the cell; a row of from three to five smaller black dots along the apical margin. Cilia white. Hind wings rather shining whitish, with a very faint rosy greyish tinge. Under side of the fore wings tinged with fuscous; the costal margins of all the wings pale straw-colour. Expanse, 15 mm.

Three specimens from Spring Vale, taken at light in November.

*Cryptolechia roseoflavida*, n. s. (Pl. XII., fig. 25).

Capillis erectis obscure roseo-brunneis. Thorace obscure roseo-brunneo. Palpis recurvis tenuibus verticem non superantibus subroseis. Antennis brunneo-fuscis. Alis

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anticis nitentibus dilute aurantio-flavidis. Ciliis roseo-puniceis, basi extremo et margine costali late roseo-puniceis, maculis duabus discalibus roseo-puniceis. Alis posticis dilute fumidis apud apicem roseo paulo suffusis.

Head rather rough with some erect scales, dull rosy brown. Thorax dull rosy brown. Palpi recurved, rather slender, not overarching the vertex, rosy pinkish. Antennæ brownish. Fore wings with the apex somewhat rounded, the anal angle not well defined, bright shining pale orange-yellow. A rosy pink shade occupies the extreme base, and overspreads the costal third of the wing to the apex, gradually blending with the pale ground colour; below this shade are two rosy-pink spots on the disc, one before and one beyond the middle; a few rosy-pink scales about the dorsal and apical margins; the cilia bright rosy pink. Hind wings pale smoky grey, with a slight rosy tinge towards the apex. Expanse, 24 mm.

Two specimens received from the late Colonel Harvey Tower from Natal.

*Cryptolechia roseocostella*, n. s. (Pl. XII., fig. 26).

Capite et thorace albis. Antennæ dilute brunneis. Palpis albis, articulo apicali roseo suffuso. Alis anticis rotundatis albis, costa anguste rosea, macula ante medium triangulare cujus apex attenuatus externe ad finem cellulæ productus dilute brunneus, margine apicali et basi marginis dorsalis dilute brunneis. Ciliis albis. Alis posticis cum ciliis albis.

Head and thorax white. Antennæ pale brownish. Palpi white, the apical joint suffused with rose-colour. Fore wings with the apex rounded, the anal angle also rounded, white, the costa narrowly bright rose-colour, having, slightly beyond its middle, a triangular pale brown patch, of which the apex is produced in an attenuated and angulated streak to the end of the cell, reaching about half-way across the wing. The apical margin is also pale brown, the space occupied by this colour clearly defined and attenuated towards the anal angle. A pale brown shade lies along the base of the dorsal margin. Cilia white. Hind wings and cilia white. Expanse, 16 mm.

Taken at D'Urban among bush in November.

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ANTÆOTRICHA, *Zeller*.

*Antæotricha ? ovata*, n. s.

Capite antennis et palpis testaceo-griseis; thorace forti. Palpis articulo tertio longitudine secundo æquali, quam in *Cryptolechia* aliquot fortiori. Alis anticis ovatis costa arcuata apice rotundato testaceo-griseis subnitentibus; puncto singulo apud finem cellulæ fusco, venis ultra eam subconspicuis; posticis quam anticis latioribus vix dilutioribus griseo-cinereis.

Head, antennæ, and palpi pale testaceous-grey, the palpi with the second and third joints of about equal length, the third slightly stouter than in *Cryptolechia*. Thorax stout. Fore wings ovate, with the costa arched, the apex rounded, pale testaceous-grey, rather shining; a single fuscous spot at the end of the cell, beyond which the veins are traceable to the apical margin. Hind wings rather broader than the fore wings, slightly paler greyish cinereous. Expanse, 25 mm.

One specimen in poor condition in Mr. Gooch's collection.

ŒCOPHORA, *Zeller*.

*Œcophora ? obliquestrigella*, n. s. (Pl. XII., fig. 27).

Capite levi, palpis tenuibus, thorace pleno. Antennis (articulo basali supra squamis erectis incrassato) et alis anticis dilutissime ochraceo-cervinis; striga costali oblique inversa ultra medium postice projecta et margine apicali anguste purpureo-fuscis puncto minimo discali concolore in terno basali squamulis dilutioribus utrinque diffusis. Posticis parvis ovatis.

Head, thorax, palpi, antennæ, and fore wings pale ochraceous-fawn colour, the head smooth, with closely appressed scales above and in front; the palpi slender, acuminate. Antennæ with the basal joint appearing thickened by a dense tuft of appressed scales above it. Thorax wide. Fore wings with the costa somewhat raised beyond the middle, with a single dark purplish fuscous streak from the highest part of the costa pointing inwards, and extending straight down to or beyond the middle of the wing. Half-way between this and the base is a small purplish fuscous dot above the middle,

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and at the same distance on its other side in the direction of the anal angle are a few scattered scales of the same colour; some small paler scales are widely scattered over the general surface of the wing. A straight purplish fuscous streak occupies the middle of the apical margin, extending downwards into the cilia above the anal angle, and upwards towards the costa near the apex, giving a square appearance which does not correspond to the actual shape of the wing margin. Hind wings narrow, ovate, rather shining, very pale cinereous, small in proportion to the upper wings. Expanse, 15 mm.

This species appears to agree more closely with *Œcophora* than with any other genus, but the hind wings are unusually small, and I am unwilling to denude the only specimen in the collection to ascertain its neuration.

One specimen in Mr. Gooch's collection.

### Teratopsis, n. g.

Capilli hirsuti; ore levi. Ocelli nulli. Haustellum mediocre, squamatum. Palpi maxillares brevissimi supra haustellum conniventes. Palpi labiales erecti verticem superantes, articulo secundo quam tertio bis longiore, tertio squamis rudibus ante apicem aliquot incrassato, apice acuminato. Antennæ supra subserratæ. Alæ anticæ costa ante medium perarcuata margine postico subobliquo, vena apicali furcata. Alæ posticæ sat latæ cellula clausa. Tibiæ posticæ hirsute pilosæ.

Head rough above, face smooth. Ocelli none. Tongue of moderate length, scaled. Maxillary palpi short, meeting over the tongue. Labial palpi erect, slightly overreaching the vertex, the third joint about half the length of the second, roughly scaled in the middle, with the apex acuminate. Antennæ slightly serrated above. Fore wings quadrangular, the costa sharply arched before the middle, the apical margin rather oblique; anal angle with long cilia. The apical vein forked, all the others single. Hind wings rather broad, rounded at the tip, not emarginate below the apex. Hind tibiæ thickly clothed with coarse hair-like scales. Spurs short.

This genus seems to be allied to *Cryptolechia*. The apical joint of the palpi, which is somewhat coarsely

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scaled instead of being slender and naked, as in that genus, and the suddenly arched, almost angulated costa, are the chief characters which appear to separate it. It has much the appearance of the genus *Teras*, Lin., among the *Tortricidæ*.

*Teratopsis tunicella*, n. s. (Pl. XII., fig. 28).

Capite thorace palpis et antennis schistaceo-griseis. Palpis articulo tertio squamis rudibus ante apicem acuminatum paulo incrassato. Alis anticis schistaceo-griseis plaga basali externe arcuata et squamis erectis perspicue marginata purpurascente, lunula auriforme ad finem cellulæ atomis atris circumjacentibus, margine apicali punctulis atris indicato. Posticis dilute schistaceo-griseis subnitentibus.

Head, thorax, and antennæ slaty grey; the palpi slaty grey, mottled with a few dusky scales on the outer sides, having the second joint of even width thickly scaled; the third joint half as long as the second, somewhat thickened in the middle, with rough scales nearly reaching to the apex, which is acuminate. Fore wings slaty grey, with a conspicuous and distinct basal patch of bronzy purple covering the basal third of the wing, except on the dorsal margin, rounded at its outer edge, which is distinguished by a line of strongly-raised blackish purple scales, reaching nearly, but not quite, to the dorsal margin. An ear-shaped spot lies at the end of the disc, its narrow blackish margin interrupted on the side immediately opposite to the anal angle, and separated by a slight interspace from its reddish purple centre. Around it are a series of minute blackish dots, which seem to be continued downwards on its inner side to the dorsal margin and anal angle, becoming more conspicuous along the apical margin, and reaching around the apex to the costa. Hind wings rather shining pale slaty greyish, lighter on the costa towards the base, with a slender pale line along the base of the cilia. Expanse, 18 mm.

A single specimen in good condition is in Mr. Gooch's collection.

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PSORICOPTERA, *Stainton.*

*Psoricoptera? hirsutella*, n. s. (Pl. XII., fig. 29).

Capite aliquot hirsuto-griseo; haustello mediocre, squamato. Palpis labialibus griseis fusco striatis et irroratis articulo secundo late fasciculato, articulo apicali erecto tenui paulum squamato. Antennis fuscis. Alis anticis scabris dilute griseo-ochraceis undique fusco suffusis et irroratis; flocco basali submediali erecto fusco et flocco post medium supra marginem dorsalem subochraceo. Posticis et abdomine cinereis.

Head slightly rough, grey. Tongue moderate coarsely scaled. Labial palpi mottled and irrorated with greyish fuscous, with the second joint thickly and widely tufted beneath; the apical joint erect, slender, slightly scaled. Antennæ fuscous, with the basal joint scarcely thickened. Fore wings pale greyish ochreous, almost entirely suffused or sprinkled with dark fuscous, with numerous scattered tufts of raised fuscous scales, of which the most prominent and conspicuous is at the base of the wing slightly below the middle. Immediately above the dorsal margin, and beyond the middle of the wing, is another conspicuous tuft of scales of the pale ground colour. Hind wings cinereous, with a slender pale ochraceous line at the base of the cilia. Abdomen cinereous. The posterior pair of tibiæ hairy. Expanse, 20 mm.

One specimen in Mr. Gooch's collection.

In neuration it differs only slightly from *Psoricoptera gibbosella*, Zell., in which species the fork of the apical vein is nearer to the cell, and the position of the veins about the anal angle is somewhat different.

GELECHIA, *Zeller.*

*Gelechia rescissella*, Zell., Handlingar Kong. Svensk. Vetens. Akad., 1852, 110; Walk., Cat. Lep. Het., B. M., xxix. 628.

*G. zetterstedtiella*, Zell., Handlingar Kong. Svensk. Vetens. Akad., 1852, 110; Walk., Cat. Lep. Het., B. M., xxix. 628.

*Gelechia zulu*, n. s. (Pl. XII., fig. 30).

Capite dilute ferrugineo. Palpis tenuibus albidis externe aliquot infuscatis. Thorace brunneo-fusco,

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patagiis canis. Alis anticis brunneo-fuscis, fascia obliqua aliquando apud medium interne projecta et macula costali ante apicem canis. Margine dorsali linea antice albida postice ferruginea indicato. Posticis sub apice vix excisis dilute fuscis.

Head pale ferruginous. Palpi slender, whitish, the third joint nearly as long as the second, slightly shaded on their outer sides. Antennæ fuscous. Thorax brownish fuscous; the wing-coverts white. Fore wings brownish fuscous, with a white fascia scarcely beyond the middle pointing obliquely outwards from the costa, and sometimes with an excrescence on its inner edge about the middle of the wing. A white triangular costal spot before the apex. The apical margin is marked by a slender whitish line, followed by some blackish scales at the base of the cilia. A pale streak runs along the dorsal margin, its upper half whitish, its lower half ferruginous. Hind wings pale fuscous, scarcely emarginate below the apex. Expanse, 12 mm.

Two specimens taken at light at D'Urban and Spring Vale in July and December (Gooch).

*Gelechia flavipalpella*, n. s. (Pl. XII., fig. 31).

Capite palpis tenuibus et antennis flavidis. Alis anticis acuminatis cum ciliis subpurascenti-fuscis puncto obscuro postmedium subobsoleto, posticis cum ciliis cinereis.

Head yellow, slightly tinged with fuscous above; the face bright yellow. Palpi slender, recurved, yellow. Antennæ simple, yellowish, slightly touched with fuscous on their upper sides beyond the base. Fore wings elongate, acuminate, together with the cilia fuscous with a purplish tinge; an almost obsolete darker fuscous spot beyond the end of the cell. Hind wings and cilia cinereous. Expanse, 17 mm.

Taken at light in October at Spring Vale (Gooch).

*Gelechia abjunctella*, Walk., Cat. Lep. Het., B. M., xxix. 629.

Two specimens are in Mr. Gooch's collection.

Taken at D'Urban in the garden in August and September.

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BRACHMIA, *Heinemann.*

*Brachmia trigella.*

*Gelechia* (*Brachmia*) *trigella*, Zell., Handlingar Kong. Svensk. Vetens. Akad., 1852, pp. 112, 113; Walk., Cat. Lep. Het., B. M., xxix., p. 628.

*Brachmia subsecivella.*

*Gelechia* (*Brachmia*) *subsecivella*, Zell., Handlingar Kong. Svensk. Vetens. Akad., 1852, pp. 113, 114; Walk., Cat. Lep. Het., B. M., xl., p. 629.

DROSICA, *Walk.*

*Drosica abjectella* (Pl. XII., fig. 32).

*Drosica abjectella*, Walk., Cat. Lep. Het., B. M., xxviii., pp. 519, 520.

One specimen of this species is in Mr. Gooch's ollection. The palpi are very peculiar, somewhat iverging, clothed beneath with a fringe of elongate cales, which, turning slightly inwards, give them a ectinated or feathered appearance. The hind tibiæ ave the first pair of spurs very long, and about equal o each other.

Mr. Gooch writes of this species, "D'Urban, bush on erea, August."

EUCLEODORA, n. g.

Caput squamis appressis lævigatum. Antennæ pubesentes alis anticis vix longiores. Haustellum sat longum ense squamatum. Palpi labiales articulo secundo iquot incrassato, articulo apicali in dimidio basali aulo supra fasciculato. Alæ anticæ elongatæ ovatæ ıb apice profunde incisæ vena apicali furcata. Posticæ nceolatæ. Tibiæ anticæ externe fasciculatæ.

Head obtuse, with appressed scales, not rough. ntennæ scarcely longer than the fore wings, pubescent. ongue rather long, coarsely scaled. Labial palpi long, ecurved; the second joint somewhat thickened about ıe middle, scaled on its upper side; third joint slender, ightly shorter than the second joint, its basal half ifted on the upper side. Fore wings elongate-ovate, eeply indented below the apex; the apical vein forked,



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both forks reaching the costal margin before the extreme apex. Hind wings lanceolate; the abdominal angle strongly defined.

*Eucleodora chalybeella*, n. s. (Pl. XII., fig. 33).

Capillis lævigatis et antennis pubescentibus cinereis. Palpis dilute cinereis articulo apicali supra ferrugineo fasciculato. Alis anticis margine apicali profunde inciso ferrugineis terno dorsali dilutiore; litura a basi ultra medium attenuate projecta, postice ferruginea subangulata, antice purpurascenti-chalybea; striga costali ultra medium peroblique reduplicata nitente chalybea; infra eam litura chalybea. Apice chalybeo substriato. Posticis cum ciliis cinereis.

Head smooth, cinereous. Antennæ pubescent, cinereous. Palpi pale cinereous, the second joint slightly thickened, the apical joint with a pale ferruginous tuft of elongate somewhat appressed scales on its basal half. Tongue coarsely scaled. Fore wings elongate-ovate, with the apex rounded, the apical margin deeply excised, ferruginous; the dorsal third of the wing paler; an elongate outwardly attenuated costal blotch coming from the base, angulated and clearly defined below the middle of the wing, is dark ferruginous on its lower, and shining purplish steel-colour on its upper, half; a slender outwardly very oblique reduplicated shining steel-coloured costal streak, joining before the apex a short single costal streak of the same colour. The apical portion of the wing with some slender steel-grey streaks. Hind wings and cilia cinereous. The anterior tibiæ slightly tufted, with elongate hair-like scales on their outer sides. Expanse, 13 mm.

One specimen, taken at Spring Vale at light.

CHELARIA, *Haw.*

*Chelaria albo-grisea*, n. s. (Pl. XII., fig. 34).

Capite albido-griseo. Palpis griseo striatis et maculatis; articulo secundo late fasciculato. Alis anticis albido-griseis; fusco-brunneo atomosis, litura apud medium elongata quadrangulari; litura costali subapicali cum macula interjacente et margine apicali fuscis, squamis paucis singule dispersis cyaneo-chalybeis. Alis posticis cinereo-fuscis sub vena costali anguste chalybeo pellucidis in vena dorsali fasciculatis.

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Head and thorax whitish grey; palpi erect, arching ver the vertex, whitish grey, streaked and spotted with greyish fuscous; the second joint with a widely project- ng semicircular tuft of long closely-packed coarse scales eneath; the apical joint with two small appressed tufts bove. Antennæ with the basal joint slightly enlarged, irty whitish, annulated with greyish fuscous. Fore ings whitish grey, with a slight pinkish tinge, irrorated ith brownish fuscous scales, and with a few single idely scattered steel-blue metallic scales chiefly about he darker markings. A somewhat quadrangular fuscous pot lies scarcely above the middle of the wing; the osta above it slightly shaded; a costal blotch of about he same size before the apex, and a smaller spot etween the two are of the same colour; the apical argin is also narrowly fuscous; cilia whitish grey. Hind wings cinereous-fuscous, with a narrow semi- ransparent steel-blue streak beneath the costal vein, nd a tuft of long cinereous-fuscous scales arising from ne base of the dorsal vein, but apparently not erect. Expanse, 21 mm.

One specimen. Spring Vale, among trees; December.

YPSOLOPHUS, *Fabricius.*

*Ypsolophus furvellus*, Zell., Handlingar Kong. Svensk. Vetens. Akad., 1852, p. 115.

*Ypsolophus latipalpis*, n. s. (Pl. XII., fig. 35).

Capite palpis et antennis griseo et fusco atomosis. alpis porrectis articulo secundo supra anguste infra te fasciculato; articulo apicali brevi filiforme; externe sco suffusis. Alis anticis angustis elongatis (margine ical obliquo) brunneo-fuscis; apud basim et in margine stali ante apicem griseo atomosis; linea angusta in si ciliorum marginis apicalis ochrea. Posticis sub- tidis dilute griseis vix purpurascentibus; linea in basi liorum dilute ochrea.

Head, palpi and antennæ speckled with grey and scous, the palpi very considerably prominent; the cond joint with a narrow gradually attenuated tuft on upper side, a wider and far projecting tuft on its der side, both laterally compressed; the apical joint liquely erect, short and filiform; both much tinged on

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their outer sides with brownish fuscous. Fore wings narrow, elongate (with the apical margin oblique, the extreme apex rounded), brownish fuscous, with a very faint plum-coloured gloss; speckled about the base of the fold and costal margin with whitish grey scales, as also about the costal margin on the apical fourth of the wing. Cilia dark brownish fuscous, slightly speckled with greyish, and with a narrow pale ochreous line along their base, continued around the anal angle. Hind wings and cilia shining pale grey, with a very faint purplish tinge; a narrow faint ochreous line running along the base of the cilia. Expanse, 14 mm.

One specimen in Mr. Gooch's collection.

*Ypsolophus straminis*, n. s. (Pl. XII., fig. 36).

Capite et thorace dilute stramineis. Antennis supra dilute punctatis. Palpis dilute stramineis externe purpurascentibus; articulo secundo incrassato plene vestito, apicali oblique projecto nec erecto, tenui. Alis anticis dilute stramineis; macula discali in medio et striga paulo ante marginem apicalem ferrugineis, squamis metallicis cyaneo-purpureis adspersis. Posticis dilute subcinereo-stramineis.

Head and thorax pale straw-colour. Antennæ pale straw-colour, faintly dotted above with fuscous. Palpi pale straw-colour on their inner sides, streaked with purplish externally; the second joint much thickened, densely clothed, laterally compressed; the apical joint projecting rather obliquely, not erect, slender. Fore wings pale straw-colour, having a pale ferruginous shade lying obliquely parallel to and near the apical margin, extending to the apex, but not quite to the anal angle, containing throughout its length bright bluish purple metallic scales; a ferruginous elongate discal spot about the middle of the wing, also containing some bright bluish purple metallic scales; between this discal spot and the anal angle is a faint streak of ferruginous-brown scales, another slight streak of the same colour beyond the middle of the cell, reaching to the dark marginal shade. Hind wings pale rather cinereous straw-colour. Legs pale straw-colour, some of the joints touched with purplish. Expanse, 18 mm.

One specimen given to me by Mr. H. Druce from Bedford, South Africa.

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*Ypsolophus siccifolii*, n. s. (Pl. XIII., fig. 37).

Capite levi antennis simplicibus et thorace pleno sseis. Palpis osseis, articulo secundo late fasciculato xterne fusco liturato; articulo apicali tenui fusco icincto. Alis anticis latitudine ter longioribus; costa ltra basim recta; margine apicali obliquo, osseo- inereis, ochraceo-cervino partim suffusis et irroratis; quamis atro purpureis in medio et in fine cellulæ lomeratis; strigulis costalibus prope apicem sub- rgenteis et linea metallice argentea in margine picali. Posticis dilute osseis subnitentibus.

Head smooth, antennæ simple, thorax wide, all bone- oloured. Labial palpi bone-coloured, projecting, re- urved; the second joint having a wide laterally ompressed tuft projecting fully its own length beyond , blotched with fuscous on its outer side; the apical int slender, acuminate, with two subconspicuous uscous rings. Fore wings cinereous bone-colour, more less irrorated and suffused with ochreous fawn- olour, especially on the upper and outer half of the ing; a few scattered dark purplish scales near the base the costal margin, and two rounded groups of dark urplish scales on the disc, one before and one beyond ie middle; some shining whitish oblique streaks on the uter half of the costa, and a bright shining silvery etallic line along the apical margin. Cilia shaded ith brownish ochreous, darker at their tips. Hind ings slightly emarginate below the apex, together with eir cilia pale bone-colour. Posterior tibiæ smooth, mewhat thickened, but not tufted. Expanse, 25 mm.

One specimen only. Spring Vale, at light; De- mber (Gooch).

NOTHRIS, *Hübner*.

*Gelechia* (*Nothris*) *externella*, Zell., Handlingar Kong. Svensk. Vetens. Akad., 1852, p. 109; Walk., Cat. Lep. Het., B. M., xxix., p. 628.

*Gelechia* (*Nothris*) *septella*, Zell., Handlingar Kong. Svensk. Vetens. Akad., 1852, p. 108; Walk., Cat. Lep. Het., B. M., xxix., p. 628.

Two specimens in Mr. Gooch's collection. Taken at Urban and Spring Vale; December.

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*Nothris meridionella*, n. s. (Pl. XIII., fig. 38).

Capite palpis et antennis dilute ochreis. Alis anticis ochreis; puncto in finem cellulæ majore, punctis tribus ante medium minoribus, duobus discalibus uno in plica, fuscis; margine apicali subfusco adumbrato punctis tribus minimis supra angulum analem; ciliis ochreis. Alis posticis cinereis; ciliis subochraceis.

Head, palpi and antennæ pale ochreous, the palpi with the second joint thickened, very slightly tufted at its apex; apical joint slender, nearly as long as the second. Thorax and fore wings ochreous, with four small fuscous dots, the largest at the end of the cell, the other three much smaller; the first on the disc at about one-fifth from the base, the second also on the disc just before the middle, the third on the fold lying obliquely below and before the second; the apical margin slightly shaded with fuscous, with two or three small marginal fuscous dots above the anal angle. Cilia ochreous. Hind wings cinereous, with pale ochreous cilia. Expanse, 15 mm.

Two specimens in Mr. Gooch's collection.

This species is nearly allied to the European *Nothris Durdhamella*, Stn., but differs in the number and position of the spots.

TOPEUTIS, *Hübner*.

*Topeutis drucella*, n. s. (Pl. XIII., fig. 39).

Capite cum flocco frontali cervine albido. Palpis capite plus quam bis longioribus porrectis. Alis anticis (costa arcuata) albidis, inter venas dilute cervino multistriatis; costæ dimidio basali conspicue albido; punctis duobus parvis discalibus brunneo-fuscis. Posticis dilute cinereo-cervinis.

Head fawn-white, thickly clothed with coarse scales projecting forwards over the face. Labial palpi whitish above, dusky beneath, projecting more than twice the length of the head beyond it, less roughly clothed than in the European species of this genus, the apical joint especially being much less coarsely scaled. The structure of the whitish antennæ is similar to those of *Topeutis barbella*, Fab., but they are somewhat less hairy in the male. Thorax whitish fawn-colour. Fore

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wings (with the costa considerably arched, the apical margin oblique) whitish, longitudinally streaked with pale fawn-colour, which fills all the interspaces between the veins, leaving these conspicuously distinguished by the whitish ground colour. Along the basal half of the costal margin is a conspicuous whitish streak, narrow at the base, broader towards its middle, and gradually attenuated towards the middle of the costa, dying out a little beyond it. At the extreme base of the costa are a few brownish scales. There are two small brownish fuscous discal spots, the lesser before, the greater beyond, the middle; a series of three or four subobsolete spots of the same colour are distinguishable along the apical margin in good specimens. Cilia whitish, mixed with pale fawn-colour. Hind wings very pale cinereous fawn-colour. Legs roughly hairy, as in *Topeutis barbella*, Fab., with which it appears to agree also in neuration. Expanse, 19 mm.

One male from Bedford, South Africa.

I am indebted to Mr. H. Druce for this interesting addition to my collection; I have ventured to name it in his honour. There are also two specimens of this species in Mr. Gooch's collection, taken at light in October and November at Spring Vale.

HYPERCALLIA, *Stephens.*

*Hypercallia subreticulata* (Pl. XIII., fig. 40).

Capite et thorace flavis miniano-roseo subtinctis. Antennis albidis fusco supra punctatis. Palpis flavis, versus apicem utriusque articuli roseo tinctis. Alis anticis flavis, strigis et lituris miniano-roseis subreticulatis, quorum majores squamis cyaneo-chalybeis adspersæ sunt. Posticis cum ciliis brunneo-fuscis.

Head and thorax bright yellow, touched with rosy vermilion. Antennæ whitish, dotted above with fuscous. Palpi erect, slightly recurved, with the second joint scaled, slightly thickened, but not tufted; the apical joint slightly scaled, acuminate; yellow, touched with rosy vermilion towards the apex of each joint. Fore wings bright yellow, subreticulated with rosy vermilion streaks and shades, of which the most important are sprinkled with steel-blue metallic scales; notably a narrow oblique fascia from beyond the middle of the

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costa to the anal angle, a diverging streak leaving this fascia below the costa and running to the basal third of the dorsal margin, two rather triangular costal spots, the one before, the other beyond, the middle, the extreme base of the costa, and a streak along the apical margin; between these markings are some few bright rosy vermilion shades. Hind wings and cilia brownish fuscous. Expanse, 14 mm.

One specimen given to me by Mr. Druce from Bedford, South Africa. It differs from *Hypercallia igniferella*, Walk., an Australian species, in its darker hind wings, and in the convergence of the vermilion streaks in the direction of the costal, instead of the dorsal, margin.

ŒCOPHORA, *Zeller*.

*Œcophora? sabiella*.

*Psecadia? sabiella*, F. & R., Reise d. Nov., pl. cxxxix., fig. 30.

Notwithstanding the strong superficial resemblance of this insect to many species of *Psecadia*, the form of its palpi at once distinguishes it from that genus. The greater length of the proboscis is the only character about the head which might perhaps be held to distinguish it from the genus *Œcophora*, in which I place it, at least provisionally. It is very nearly allied to, and evidently congeneric with, *Œcophora picarella*, Walk., a New Zealand species. The following description is, perhaps, scarcely necessary, since it is easily to be recognised by the excellent figure in pl. cxxxix. of Felder and Rogenhofer's 'Reise der Fregatte Novara.'

There are three specimens in Mr. Gooch's collection, taken at light at Spring Vale in August. I have also received it from Mr. Druce, who obtained it from Bedford, South Africa.

Head white; palpi recurved, overarching the vertex, white; the second joint with a black ring at the base, and another at the apex; third joint with a black ring about the middle, and another at the apex. Antennæ fuscous, with a black spot on the white basal joint. Tongue very long, scaled at the base. Thorax and fore wings white; the thorax with four black spots, one in front, one on the middle, and one on each side; the fore wings with the extreme edge of the costa black to the

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iddle, some black irregular patches on the upper half the wing; near the base a black cross with equal arms the outer edge of the basal third; a conspicuous black -shaped mark, with irregular dentated edges about the iddle, reaching the costa before and beyond the middle, d the dorsal margin scarcely beyond the middle; three ack spots on the dorsal margin, one near the base, one tweeen the cross and the V-shaped mark, and one ar the anal angle; a small black costal spot equi-stant between the arms of the V and some small ack marginal spots around the apex and the anal gle, with an irregular thick black streak extending wards from below the apex. Legs white, with several ack annulations. Expanse, 26 mm.

ERETMOCERA, *Zeller*.

It is remarkable that Mr. Walker, in characterising e genus *Exodomorpha* (Cat. Lep. Het., B. M., xxix., 833), should not have been reminded of Professor ller's genus, *Eretmocera* (Microp. Caffr.; Kong. Svensk. tens. Akad., 1852, p. 98), which was established to clude several allied species occurring in the same trict as those described by Mr. Walker, and in some es apparently identical with them. I am indebted to . A. G. Butler for having called my attention to the t that the genus *Staintonia*, Staud. (Stet. Ent. Zeit., 59, p. 250), is the same as *Exodomorpha*, Walk., in ich case it must also yield to the priority of Zeller's *etmocera*.

*Eretmocera* (*Œdematopoda*) *princeps*, Zell., Handlingar Kong. Svensk. Vetens. Akad., 1852, pp. 96, 97; Walk., Cat. Lep. Het., B. M., xxix., p. 707.

*Eretmocera fuscipennis*, Zell., Handlingar Kong. Svensk. Vetens. Akad., 1852, p. 98; Walk., Cat. Lep. Het., B. M., xxix., p. 707.

Var. α.=*Exodomorpha inclusella*, Walk., Cat. Lep. Het., B. M., xxix., p. 834.

Var. β.=*Exodomorpha derogatella*, Walk., Cat. Lep. Het., B. M., xxix., p. 834.

Prof. Zeller describes what he regards as two varieties this species, and points out the differences between m, as follows:—



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"Var. α.—Alis anterioribus brunneis; posterioribus supra fuscescentibus, subtus puniceis, ciliis circa apicem fuscis, ceteris puniceis; abdomine coccineo, macula baseos dorsali segmentoque anali fuscis. Mas et fœm."

"Var. β. ut α. sed colore flavissimo pro puniceo coccineoque, mas.—Alæ posteriores anguste lanceolatæ, valde acutæ, dilute brunneæ, basim versus dilutiores ibique squamis pallide puniceis (in var. β. flavidis) immixtis, subtus puniceæ (var. β. flavæ) apice ipso fusco-cilia utriusque paginæ in var. α. punicea, in var. β. flavæ, in utraque varietate circa apicem latius fusca."

Mr. Walker's two supposed distinct species agree closely with the above descriptions, and a single specimen of var. β. = *E. derogatella*, Walk., is in Mr. Gooch's collection.

*Eretmocera scatospila.*

Zell., Handlingar Kong. Svensk. Vetens. Akad., 1852, p. 99; Walk., Cat. Lep. Het., B. M., xxix., p. 708.

*Eretmocera lunifera.* (Pl. XIII., fig. 41).

Zell., Handlingar Kong. Svensk. Vetens. Akad., 1852, p. 100; Walk., Cat. Lep. Het., B. M., xxix., p. 707.

A single specimen of this beautiful little species occurs in Mr. Gooch's collection, without any record of where or when it was taken.

*Eretmocera lætissima.*

Zell., Handlingar Kong. Svensk. Vetens. Akad.,, 1852, pp. 100, 101; Walk., Cat. Lep. Het., B. M., xxix., p. 708.
*Exodomorpha divisella*, Walk., Cat. Lep. Het., B. M., xxix., pp. 833, 834.

These names are undoubtedly synonyms for one very distinct and apparently not uncommon species, which, however, is not represented in Mr. Gooch's collection.

ÆCHMIA, *Treitschke.*

*Æchmia bohemani*, Zell., Handlingar Kong. Svensk. Vetens. Akad., 1852, p. 116; Walk., Cat. Lep. Het., B. M., xxx., p. 842.

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GLYPHIPTERYX, *Hübner.*

*Glyphipteryx? dimidiatella*, Walk., Cat. Lep. Het., B. M., xxx. 839.

This insect has not in any degree the appearance of e genus *Glyphipteryx*; but as only one wing of the pical species is in even reasonably fair condition, the tennæ and palpi being altogether absent, I am unable determine in what known genus, if any, it could be ore correctly placed. I may add to Walker's descrip- n that beyond the yellow basal half the fore wing is ther shining purplish.

IDIOGLOSSA, n. g.

Caput superne ac in fronte squamis appressis lævi- tum. Antennæ crassiusculæ simplices, articulo basali n majus incrassato quam alis anticis paulo breviores. lpi labiales tenues articulo secundo squamis ap- essis vix incrassato, articulo apicali nudo acuminato. austellum supra longe fasciculatum. Alæ anticæ et sticæ angustæ elongatæ acuminatæ, metallice ornatæ. biæ posticæ pilosæ.

Head smooth above and in front. Antennæ stout, mple, with the basal joint not thickened, rather orter than the fore wings. Tongue long and thickly aled, with a reduplicated tuft of long hair-like scales pending from its basal half, above.* Fore and hind ngs narrow, elongate, acuminate, and ornamented th metallic scales. Hind tibiæ somewhat hairy.

This genus seems to be allied to the genera *Stathmo- da*, Stn., and *Cosmopteryx*, Hüb., which it much sembles in the form of the wings and in its general pearance; but the tufted base of the tongue and ightly ornamented hind wings at once separate it, d enable it to be easily recognised.

*Idioglossa bigemma*, n. s. (Pl. XIII., fig. 42).

Capite argenteo; palpis argenteis. Antennis argenteis bflavide obscurius annulatis. Alis anticis ochreis genteo-æneo metallice pernitidis; fascia ante apicem rangusta obliqua, striga ante medium, macula prope

* In the figure this is shown somewhat too much divided; the nd wings also are a little too long.

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basi costæ, et squamis in terno basali marginis dorsalis inter cilia projectis cupreo-argenteis. Alis posticis ochreis plaga basali cum fasciis mediali et subapicali albidis cupreo-argenteo metallice marginatis.

Head and face shining silvery; palpi silvery. Antennæ silvery, inconspicuously annulated above with yellowish. Fore wings ochreous, brightly shining with silvery and brassy metallic scales; a narrow fasciaform streak tending obliquely outwards from the apical fourth of the costa, a shorter oblique streak before the middle, reaching about half across the wing, and a costal spot nearer to the base, are composed of shining metallic silvery slightly-raised scales, appearing, under a strong lens, dull purplish brown, golden yellow, or silvery white as the light strikes them at different angles. Cilia very long, dull yellowish white, mixed with ochreous about the anal angle, and with a few strong purplish brown projecting scales on the dorsal margin at about one-third from the base. Hind wings straight, evenly attenuated towards the apex, ochreous; with a basal patch, a median, and a subapical fascia, all whitish, conspicuously margined with silvery iridescent scales, as in the fore wings. Cilia dull yellowish white, with a slight indication of a few projecting scales on the abdominal margin opposite to those on the fore wings. Legs yellowish, the tibiæ pilose, tarsi shining, slightly metallic. Expanse, 10 mm.

One specimen. Taken at D'Urban, in West Park thicket, in July.

### Setomorpha, *Zeller*.

*Setomorpha rutella*, Zell., Handlingar Kong. Svensk. Vetens. Akad., 1852, pp. 94, 95; Walk., Cat. Lep. Het., B. M., xxx., p. 708.

### Cnemidolophus, n. g.

Capite hirsutum. Haustellum mediocre squamatum. Ocelli nulli. Palpi labiales recurvi articulo secundo vix incrassato tertio tenui, acuto. Antennæ simplices, articulo basali elongato clavato. Alæ anticæ elongatæ lanceolatæ, costa aliquot arcuata apice depresso. Posticæ lanceolatæ, apice attenuato depresso. Tibiæ anticæ

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t mediæ dense fasciculatæ, posticæ pilosæ calcaribus nparibus.

Head rough. Tongue of moderate length, thickly caled. Ocelli none. Labial palpi recurved, with the econd joint scarcely thickened, the third joint slender nd pointed. Antennæ simple, the basal joint elongate-lavate. Fore wings elongate-lanceolate, the costa some-vhat rounded, the apex depressed. Hind wings lanceo-ate, the apex attenuated and depressed. The first and econd pair of tibiæ conspicuously and densely tufted, ne third pair coarsely hairy. The inner spurs much onger than the outer.

Probably allied to the genus *Laverna*, Curtis.

*Cnemidolophus lavernellus*, n. s. (Pl. XIII., fig. 43).

Capite albo, brunneo irrorato. Palpis albis, brunneo naculatis. Antennis albo et brunneo annulatis. Alis nticis albis, maculis duabus in basi costæ, fascia mediali atissima irregulari et litura apicali brunneis, squamis isco-purpureis nitentibus admixtis. Posticis dilute inereis subnitentibus, tibiis anticis et mediis fasciculatis lbis, brunneo bifasciatis; pedibus albis fusco externe naculatis. Tibiis posticis hirsutis cum pedibus externe runneo submaculatis.

Head white, mottled with brown. Palpi white, with a ale brownish spot at the apex of the second joint, and vo or three pale brownish marks on the apical joint. ore wings white, with two brown costal spots near the ase, the second of which is prolonged by a few brownish iscous scales, indicating an obsolete basal patch or scia; before the middle commences a very wide regular fascia occupying about one-half of the whole rface of the wing, its inner edge being more clearly fined than its outer edge, which extends obliquely out-ards through the cilia at the anal angle. The fascia as a generally mottled appearance, and is for the most rt brown, upon which are distributed patches of shining rk purple scales, especially along the inner edge, near e costa, and on the dorsal half of the wing about the iddle; it is also occasionally interrupted by more or ss conspicuous spots of the white ground colour, of hich the most clearly defined is a small costal spot ear the commencement of the fascia. There is a brown

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patch at the apex extending through the apical cilia, and much mottled with shining dark purple scales. The cilia on the middle of the apical margin are white. Hind wings pale cinereous, somewhat shining, with scarcely paler cilia. First and second pairs of tibiæ white, with strong thick tufts doubly barred on the upper side with brown; the feet spotted with fuscous. Third pair of tibiæ densely hairy, together with the feet outwardly spotted with brownish. Expanse, 19 mm.

One specimen in Mr. Gooch's collection, with no record of its capture.

LECITHOCERA, *Herrich-Schäffer*.

*Lecithocera anthologella*, Wallgr., Öf. Af. Kongl. Vet. Akad. För. 1875, Arg. 32, p. 129.

*Lecithocera maculata*, n. s. (Pl. XI., fig. 18).

Capite levi, fusco. Palpis externe fusco suffusis interne albido-ochraceis. Antennis crassiusculis ochreo-flavidis. Alis anticis fuscis subnitide purpurascentibus macula discali minore macula in finem cellulæ majore et macula subobsoleta costali in terno apicali ochraceis. Posticis et abdomine fuscis quam anticis paulo dilutioribus.

Head smooth, fuscous. Palpi whitish ochreous on their inner sides, touched with fuscous externally. Antennæ very thick yellowish ochreous. Fore wings fuscous, slightly shining, and with a purplish tinge; a small faint ochreous discal spot on the outer edge of the basal third; a larger roundish faint ochreous spot at the end of the cell, and another less conspicuous spot of the same colour (sometimes scarcely visible) on the costal margin above and beyond it, from which an outwardly angulated line of very faint ochreous scales crosses the wing to the dorsal margin. The hind wings and abdomen fuscous, slightly paler than the fore wings. Expanse, 13 mm.

Two specimens taken at Spring Vale, in bush and at light, December and March.

This differs from other species of the genus with which I am acquainted in the presence of pale ochreous spots on the fore wings.

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LITHOCOLLETIS, *Zeller.*

*Lithocolletis zulella*, n. s. (Pl. XIII., fig. 44).

Capite palpis et antennis albis. Alis anticis cervinis puncto apicali nigro. Strigis dorsalibus duabus albis prima a basi secunda a medio, strigulis costalibus brevioribus albis ultra medium concurrentibus. Posticis cinereis.

Head, antennæ, and palpi white; thorax white, with a fawn-brown streak down the middle. Fore wings fawn-brown, with two dorsal and two smaller costal streaks; the first dorsal streak, starting from the base, joins the first costal streak, starting beyond the middle, at an acute angle on the costal half of the wing; the second dorsal streak, starting from the middle of the dorsal margin, joins the second costal streak, starting on the apical fourth of the wing (also at an acute angle) immediately before the apex, on which is a black spot; a few blackish scales are to be found between the costal streaks, also on the outer edge of the first and inner edge of the second dorsal streaks. Hind wings and cilia cinereous. Expanse, 11 mm.

One in Mr. Gooch's collection.

PTEROPHORIDÆ.

AGDISTES, *Hübner.*

*Agdistes pustulalis*, Walk., Cat. Lep. Het., B. M., xxx., pp. 927, 928.

This species is represented in the Gooch collection by a single specimen.

It is probably very nearly allied to *Agdistes heydenii*, Zeller, having an indication of the fuscous dots and cuneiform shade which distinguish that species. I have seen no specimens in a condition which would warrant a re-description.

AMBLYPTILUS, *Hübner.*

*Amblyptilus cosmodactylus*, Hüb., Wocke Cat., No. 3131.

*? Pterophorus acanthodactylus*, Zell., Handlingar Kong. Svensk. Vetens. Akad., 1852, p. 117.

*Oxyptilus direptalis*, Walk., Cat. Lep. Het., B. M., xxx., p. 934.

This is most probably the species recorded by Professor Zeller from South Africa as *Amblyptilus acanthodactylus*.

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I find three specimens in Mr. Gooch's collection labelled as occurring at D'Urban (West Park), and Spring Vale, in bush in the afternoon, and at light in the evening in July, August, and November. These agree with the almost cosmopolitan *cosmodactylus*, but not with the true *acanthodactylus*.

There is also one South African specimen in the British Museum, placed with others under the name *Oxyptilus direptalis*, Walk. On comparing Mr. Walker's description with the three distinct species in this series, I find that it agrees only with the first specimen, which is undoubtedly *Amblyptilus cosmodactylus*, which must, therefore, be considered the type of his *O. direptalis*.

*Amblyptilus africæ*, n. s. (Pl. XIII., fig. 45).

Capite et alis anticis sordide brunneo-ochraceis; alis anticis minus quam ad medium fissis costa supra basim fissuræ et puncto interjacente fuscis. Lacinia anteriore interne fusco adumbrata, apice producto subfalcato; lacinia posteriore interne fusco adumbrata, ciliis brunneo-fuscis; margine dorsali squamis obscure fuscis denticulato. Alis posticis brunneo-fuscis, digito secundo subfalcato, digito tertio postice bidenticulato. Tibiis posticis dilute brunneo-ochraceis, calcaribus fusco acuminatis.

Head and fore wings dingy brownish ochreous, the fore wings cleft to one-third of their length, having a dark fuscous spot above the base of the fissure about half-way between this and the costa; the costa above the base of the fissure shaded with fuscous. Anterior lobe with the apex produced, subfalcate, having a narrow subfalcate shade along its middle, margined at its outer end by a slender pale line; a fuscous shade on the costa above the apex. Second lobe with a fuscous shade along its middle; the anal angle not well defined. Cilia brownish fuscous, with a projecting tooth of dark fuscous scales slightly beyond the middle of the dorsal margin. Hind wings brownish fuscous, the first cleft reaching scarcely beyond the middle; the apex of the second lobe slightly falcate, the third lobe with two teeth of dark fuscous scales in the fringe, one small near the base, one widely triangular about the middle. Anterior tibiæ darkly tufted; hind tibiæ pale brownish ochreous, with very long spurs, not tufted, each spur tipped with fuscous, the inner one much longer than the outer.

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Abdomen brownish fuscous at the sides, with a pale dingy ochreous longitudinal streak above, along the centre of which runs a slender brownish fuscous line. Expanse, 27 mm.

Two specimens taken at Spring Vale at light in May. I have also received this species from Zululand through the late Colonel Harvey Tower.

OXYPTILUS, *Zeller.*

*Oxyptilus caffer*, Zell., Lin. Ent. vi., p. 348; Handlingar Kong. Svensk. Vetens. Akad., 1852, p. 118; Walk., Cat. Lep. Het., B. M., xxx., p. 934.

*Oxyptilus walkeri*, n. s.

Capite et thorace cervinis, palpis tenuibus porrectis. Alis anticis vix ad medium fissis cervinis, lacinia posteriore subfalcata, macula ante medium fusca squamis subalbidis secuta, macula fuscescenti ad basim fissuræ, maculis tribus costalibus una apicali subconspicuis, fasciis duabus dilutis subobsoletis transversis, ciliis intra fissuram et in margine dorsali squamis singulis fuscescentibus dentatis. Alis posticis quam anticis aliquot obscurioribus, digito tertio squamis fusco-brunneis paulo ante apicem denticulato, tibiis brunneo et albido alternantibus.

Head and thorax fawn-brown, the latter posteriorly paler. Antennæ greyish brown; palpi slender, porrected, not tufted. Fore wings cleft nearly to the middle, fawn-brown; a fuscous spot before the middle is followed by some whitish scales; there is a fuscous spot at the base of the fissure, above and beyond it three costal and one apical spot, blackish; the second costal spot is preceded and the third costal spot is followed each by a band of paler whitish scales, which bands are continued across both lobes, but not conspicuously; between these paler bands the cilia within the fissure are studded with fuscous scales, as also on the dorsal margin of the second lobe, the apex of which is elongated and subfalcate, with a defined anal angle. The hind wings are somewhat darker than the fore wings, the posterior cleft extending very nearly to the base; the third lobe ornamented on its hinder margin with alternate whitish



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and fuscous scales at the base of the fringes, and with a conspicuous tooth of dark brownish fuscous scales near the apex, above which the fringes on the anterior edge of the lobe are also thickened with dark scales up to the apex. The abdomen is missing in all Mr. Gooch's specimens; the legs are whitish ochreous, banded with dark brown above each joint; the spurs whitish ochreous, the first pair longer than the second; above each pair is a conspicuous fringe of raised dark brown scales. Expanse, 16 mm.

This species stands second in the British Museum series of *Oxyptilus direptalis*, Walk.; but an examination of the description shows (as stated above) that it applies with more correctness to the example of *Amblyptilus cosmodactylus*, which stands first in the same series, and which is evidently the type; the name *O. direptalis*, Walk., must, therefore, be abandoned, inasmuch as it could not have been intended to apply to the species now under description. It would have been difficult to render this species recognisable by means of a figure; it is nearly allied to *O. pilosellæ*, Zell., the tooth of scales on the third lobe of the hind wings being somewhat nearer to the apex than in *O. lætus* and *O. distans*, which species it more closely resembles in appearance.

Three specimens in Mr. Gooch's collection taken at Spring Vale and D'Urban among grass in the afternoon, and at light in the evening in November and December.

*Oxyptilus wahlbergi*, Zell., Lin. Ent. vi., p. 346; Handlingar Kong. Svensk. Vetens. Akad., 1852, p. 117.

*O. wahlbergi*, Walk., Cat. Lep. Het., B. M., xxx., p. 934.

*Pterophorus rutilalis*, Walk., Cat. Lep. Het., B. M., xxx., p. 943.

Three specimens of this species are in Mr. Gooch's collection without any record of the time or place of capture.

Of the palpi Zeller writes:—"Taster von doppelter Kopflänge, weisslich. Endglied über den spitzen Haarbusch des zweiten Gliedes hinausreichend, weiss, auf der Unterseite schwarz."

The palpi are very peculiar; there is a small pointed tuft of hair on the first as well as on the second joint,

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ich makes them appear to consist of three spines of dually increasing length and divergence.

This species can scarcely be considered a true *yptilus*. The peculiarity of the palpi alone separates from that section of the genus *Aciptilus*, which has n held to include *A. paludum*, Zell., and *A. siceliota*, l., to which it appears to be allied.

ŒDEMATOPHORUS, *Wallengren*.

*Edematophorus longalis*, Walk., Cat. Lep. Het., B. M., p. 943.

The typical specimen is in bad condition, but seems belong to the genus *Œdematophorus* by reason of its ucture.

MIMÆSEOPTILUS, *Wallengren*.

*Mimæseoptilus sabius*, F. & R., Reise d. Nov., pl. cxl., fig. 60.
Caffraria.

There is a single specimen in bad condition of another cies of *Mimæseoptilus* in Mr. Gooch's collection, taken ong grass in the market square at D'Urban in July. e wings appear to be almost unicolorous pale greyish wn; the head, thorax, antennæ, and the tufts of the pi more decidedly grey. There is a fuscous discal t before the middle, and a faint anti-fissural dot of same colour. It is a much smaller species than *næseoptilus sabius*, F. & R. Expanse, 18 mm.

LIOPTILUS, *Wallengren*.

*Lioptilus bonæspei*, n. s. (Pl. XIII., fig. 46).

lis anticis dilute stramineis, cervino præcipue ultra lium adumbratis, dimidio costali laciniæ posterioris te stramineo. Ciliis omnibus cervinis. Posticis le cervinis, ciliis ante medium digiti posterioris ido substriatis.

alpi slender, projecting nearly the length of the head ond it. Antennæ tinged with fawn-colour. Fore gs cleft to one-third of their length, straw-coloured, ded with fawn-brown over more than the costal half he wing, except towards the base, where only the a is shaded. The pale straw-colour extends from the

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basal portion of the wing in a narrow streak along the upper edge of the second lobe, leaving the cilia along the margin of the cleft, as well as the dorsal half of the lobe and the cilia upon it, fawn-brown. Hind wings shining fawn-colour, with no projecting scales, but apparently a slightly darker streak in the cilia of the third lobe just before the middle. Legs pale stramineous, with a dark slender line along their upper sides and on the pale spurs, which are almost equal in length. Expanse, 19—20 mm.

One in Mr. Gooch's collection.

ACIPTILUS, *Hübner*.

*Aciptilus albidus*.

*Pterophorus albidus*, Zell., Lin. Ent. vi., p. 397; Handlingar Kong. Svensk. Vetens. Akad., 1852, p. 118.

*Aciptilus albidus*, Walk., Cat. Lep. Het., B. M., xxx., p. 948.

*A. albida*, Wallgr., Öf. Af. Kongl. Vet. Akad. För., 1875, Arg. 32, p. 130.

Three specimens of this species taken by Mr. Gooch at D'Urban among rushes in the evening in July.

*Aciptilus candidalis*, Walk., Cat. Lep. Het., B. M., xxx., p. 948.

The type of this species is stated by Mr. Walker to have been received from Sierra Leone. I find one specimen in Mr. Gooch's collection which seems to agree with it in all particulars. It was taken at Spring Vale in March.

*Aciptilus adumbratus*, n. s. (Pl. XIII., fig. 47).

Capite dilutissime brunneo macula parva brunnea inter antennas subflavescente albidas. Alis anticis flavescente albidis, macula parva ante medium macula in basi fissuræ squamis concoloribus anguste connexis brunneis. Costa (præcipue in lacinia prima ante apicem) brunneo adumbrata. Ciliis intra fissuram et sub lacinia posteriore præcipue versus apicem brunneis, basibus obscurioribus. Posticis brunneis.

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Head very pale brownish, with a small brown spot ween the antennæ, which are yellowish white. Fore gs yellowish white, cleft to one-third of their length, costa shaded with brown nearly to the apex, two-ds of the apical lobe being suffused with brown les; a small darker brown costal spot slightly beyond base of the cleft, a conspicuous brown spot at the e of the cleft connected by a line of brown scales, n a rather narrower spot of the same colour before middle of the wing; the cilia within the cleft and w the second lobe deeply shaded with brown, which arkest at their base towards the apex; a few brownish es also along the basal third of the dorsal margin. d wings and cilia brown. Abdomen missing. Legs lowish white, the posterior tibiæ with slender brown s along their outer and upper sides, as well as on the rs. Expanse, 16 mm.

ne specimen taken at Pinetown at light in April.

*Aciptilus tripunctatus*, n. s. (Pl. XIII., fig. 48).

apite et antennis cinereis, fronte albido. Alis anticis s; striga in basi marginis dorsalis brunnea, macula ali supra basim fissuræ brunnea squamis dilutioribus isis ad marginem dorsalem ante medium oblique pro-ta; punctis in margine laciniæ anterioris duobus alibus uno dorsali, strigula in margine anteriore, et cto in margine dorsali laciniæ posterioris, brunneis. is dilute brunneis albo interruptis. Posticis cum s nitentibus dilute cinereis, punctulo subobsoleto in e extremo utriusque digiti.

Head and antennæ cinereous, the front whitish; palpi ereous. Fore wings cleft to fully one-third of their gth, white, with a brown streak along the dorsal rgin near the base, followed by an indistinct spot of same colour before the middle, connected obliquely a line of paler brownish scales, with a conspicuous wn costal spot above the base of the fissure. There three dark brown spots on the margins of the anterior e, the first surrounded by a paler brownish costal de, the second also on the costa near the apex, the d on the posterior margin, rather nearer to the apex n the first. Along the middle of the anterior margin he second lobe is a brown streak, an inconspicuous

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small spot of the same colour lying immediately below it on the opposite margin of the lobe. The costal cilia are white, but those within the fissure and beneath the second lobe are brown, interrupted in the middle of each lobe by a white band. Hind wings and cilia pale cinereous, having a very small almost obsolete darker spot at the extreme apex of each lobe; first and second pairs of legs white, streaked with brown, the third pair white, with a conspicuous brown spot above at the first pair of spurs. The tarsi slightly shaded with cinereous. Expanse, 18 mm.

Two specimens from Spring Vale taken at light in November.

## ALUCITIDÆ.

### Alucita, *Zeller*.

*Alucita butleri*, Wallgr., Öf. Af. Kongl. Vet. Akad. För., 1875, Arg. 32, p. 130.

Transvaal.

*Alucita fortis*, n. s. (Pl. XIII., fig. 49).

Capite, thorace, et antennis dilute griseo-fuscis; palpis griseo-fuscis, plene vestitis, quam capite et thorace longioribus porrectis. Alis anticis subalbidis, costa albido et griseo-fusco maculata, plaga basali oblique marginata in costa latiore griseo-fusca, fascia mediali anguste et margine apicali late griseo-fuscis; posticis subalbidis ultra medium dilute griseo-fusco latius adumbratis, linea submarginali anguste interne reduplicata griseo-fusca.

Antennæ, head, and thorax pale greyish fuscous; palpi greyish fuscous, densely clothed, projecting more than the length of the head and thorax beyond the front. Fore wings dingy whitish, the costal lobe mottled with greyish fuscous; a basal patch covering about one-fourth of the wing, its outer margin oblique, widest on the costa, greyish fuscous; a greyish fuscous narrow inwardly oblique central fascia, well defined on its inner, gradually shaded off on its outer, edge. The apical margin is rather widely greyish fuscous, a slender whitish line crossing the lobes before the extreme margin; a pale greyish fuscous shade lies half-way between the central fascia and the marginal shade. Hind wings of the same dingy whitish colour as the fore wings, with a

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rather wide pale greyish fuscous shade beyond the middle, a slender line of the same colour beyond it, followed by a wider one near the margin just before the points of the lobes, each of which bears a small pale greyish fuscous dot. Expanse, 23 mm.

One specimen received from the late Colonel Harvey Tower from South Africa, probably Zululand. A large and conspicuous species, having the wings less deeply cleft than in the European forms of this group; the palpi are also very conspicuously longer and more thickly clothed. This species should probably be made the type of a new genus.

The discovery of allied or intermediate forms may at some future time render it necessary to distinguish them from the original genus *Alucita*.

*Alucita ferruginea*, n. s.

Two specimens of a new species of *Alucita* in Mr. Gooch's collection are not in sufficiently good condition to be minutely described, but their colour is very different from that of any known species with which I am acquainted. The ground colour of all the wings appears to be yellowish white, and the markings, which are distributed transversely across the wings, as is usual in this genus, are shining pale yellowish ferruginous. Expanse, 14 mm.

*Alucita capensis* ? F. & R., Reise d. Nov., pl. cxl., fig. 63.

Mr. Gooch's collection contains two specimens, probably referable to this species, but the scarcely satisfactory figure given by Felder and Rogenhofer is accompanied by no description, and by no further assistance to its future recognition than the one remark, "*Accedens* ad *cymatodactylum* ?"

They appear to be allied to *Alucita grammodactyla*, Zell., but, like most of the *Pterophoridæ* in this collection, they are in very imperfect condition.

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12. *Tinea ? erinacea*, Walk.
13. *Nemophora elongatella*, Wlsm.
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16. *Hyponomeuta subplumbellus*, Wlsm.
17. „ *perficitellus*, Walk.
18. *Lecithocera maculata*, Wlsm.
19. *Depressaria trimenella*, Wlsm.
20. *Enicostoma coarctata*, Wlsm.
21. *Cryptolechia stramineella*, Zell.
22. „ *obliquella*, Wlsm.
23. „ *dilutella*, Wlsm.
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48. „ *tripunctatus*, Wlsm.
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## XVI. *On the species of the genus* Euchroma.

By D. Sharp.

[Read July 6th, 1881.]

The *Buprestidæ*, known to entomologists under the generic name of *Euchroma*, are amongst the largest and most abundant in collections of exotic Coleoptera; but it is unfortunately only too true that very little trustworthy information is recorded about them. In the Munich Catalogue two species are recognised; and I have received at various times from my friend, the Rev. W. Harper, of Demerara, specimens of what have appeared to myself and other entomologists a third distinct species; this I intended to make known under the name of *Buprestis Harperi*, but as I had noticed that the two recognised species were very variable, or else that there were more than two species, I took the opportunity of procuring from my entomological friends all the specimens they could send me for examination. The result of this has been to convince me that at present there exist only two species in our collections, and that, though both are variable and in some of their varieties greatly resemble one another, yet they are, so far as is yet known, perfectly distinct. I have thought it would be acceptable if I epitomised the results of my observations in the form of short diagnoses of the two species and remarked on the variations they exhibit, and alluded to some other points on which there exists at present but scanty or erroneous information. The two species are the *Buprestis gigantea* of L., and the *B. goliath* of Laporte. There can be no doubt, I think, that the species to which I have assigned the former name was the one intended by Linnæus, and it appears in fact to have been the only one known to the older entomological describers. The *Buprestis goliath* was described by Mannerheim under the name of *Euchroma columbica* very shortly after Laporte and Gory's description had appeared.

The external characters distinctive of the two sexes



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are conspicuous, and the following are common to the two species:—The males have the middle tibiæ dilated, or slightly knobbed, inwardly at the apex; the prosternum is furnished along the middle with erect dense fine pale pubescence (which is frequently more or less rubbed off in worn specimens), and this is continued along the middle of the metasternum, where it diverges into two patches, which are continued along the inner margins of the hind coxæ; also the lower (or hind) margins of the femora, as well as the trochanters, are more or less densely pubescent. The fifth ventral segment is longer than the preceding one, but not twice as long, and its hind margin is truncate, and furnished in the middle with a shallow broad angular emargination of somewhat variable shape and size; while in the female this plate is elongate, more than twice as long as the preceding one, and narrowed towards the extremity, where the raised margin is slightly interrupted in the middle by a minute notch, which in some individuals, and more especially in *B. goliath*, extends a good deal forwards. In the male the sides of the eighth dorsal segment are abruptly bent downwards, and thus a small arched notch is formed at the extremity of the segment; in the female the edges of this plate are not depressed, so that it is flat transversely, and does not exhibit any distinct notch (there may be a very slight emargination) at the extremity. In the male there is a large sixth ventral plate concealed within the preceding segment; the hind margin of this plate is cut away in a peculiar asymmetrical manner, the emargination being much larger and deeper on the left side than it is on the right; the seventh ventral plate is, in the male sex, very visible; it is punctate where exposed, and metallic in colour, and deeply impressed on each side of the middle; the dorsal plate attached to this terminal ventral plate consists apparently of two plates united together by a strongly angulate transverse suture; the basal of these two is smooth, polished, and shining, while the terminal one is densely punctate and finely pubescent, and is triangular in form, the apex of the triangle being exposed, though it is quite retractile. The œdeagus is a very simple sublinear body, acuminate at the apex, and consisting of a large dorsal plate, and a small and short ventral plate; this ventral plate is received in the larger dorsal plate, so as to be much concealed, and is membranous at its base,

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at its attachments to the dorsal plate, so that it apable of elevation and depression at its free ex- ity. The œdeagus is received in a large corneous th, the apical half of which is divided into two gate separated lobes.

the female the sixth ventral plate is very large, gh it is concealed within the preceding segment; it ensely punctate, and similar in form to the last nal (that is the fifth) ventral plate, and, like it, ore or less minutely notched at the extremity. There seventh ventral plate in the female. The form of eighth dorsal plate in the female has been described e; there is a smaller ninth dorsal plate usually pletely concealed under this eighth plate, but which be exserted, and is sometimes visible in dried speci- s. The ovipositor is not very large, and, to judge a cursory examination of its structure, may prove ologous with the œdeagus and its sheath in com- tion.

*Buprestis gigantea*, L.

lore varibilis, semper metallescente; coleopteris ter rugulosis, lateribus versus apicem integris, dente uturali parum prominulo. Long. 50—70; lat. 29 mm.

. Abdomine segmento dorsali octavo lateribus de- s, apice minute arcuato, arcus basi in medio triangu- er prominulo; œdeagi theca utrinque ad apicem rum penicilla instructa; œdeago subtus usque ad em plus minusve distincte sulcato, vel canaliculato.

. Abdomine segmento 5° ventrali, apice in medio ute, plus minusve profunde emarginato, emargi- one longitudine quam latitudine breviore.

*Buprestis goliath*, Cast. et Gory.

lore variabilis, semper metallescente; coleopteris us rugulosis, lateribus versus apicem serratis, dente uturali elongato. Long. 50—60; lat. 20—25 mm.

. Abdomine segmento 8° dorsali lateribus deflexis, e minute simpliciter arcuato; œdeagi theca absque ; œdeago subtus versus apicem nullo modo sulcato.

. Abdomine segmento 5° ventrali, apice medio pro- e ovaliter emarginato, emarginatione longitudine n latitudine longiore.

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The individuals of both of these species are frequently densely covered with an exudation which has much the appearance of pollen. According to Rojas (Ann. Soc. Ent. Fr. 1857, p. 333) this is, however, a natural secretion, and can be renewed by the insect during its lifetime, especially under the influence of heat.

As regards the distribution of the species: *B. gigantea* occurs in Eastern South America, from Rio de Janeiro to British Guiana; while *B. goliath* is found in Central America and North-Western South America, from Honduras to Bogota. I have not seen any specimens from Venezuela, but according to Rojas (*loc. sup. cit.*) it is the *B. goliath* (*Euchroma columbica*, Mann.) that is found there. H. Deyrolle has sent me word that he possesses a *B. gigantea* from Bogota, but I think this is probably an error, the evidence at present available, with this exception, showing that each of the two species has its own area of distribution, and that they are not found in the same district. Each species varies a good deal, and the variations seem to be to a considerable extent geographical, and it is worthy of remark that that form of *B. gigantea*, which is most different from *B. goliath*, comes from British Guiana, the district which is nearest, geographically, to the area of distribution of *B. goliath*. The variations are of considerable importance, and, so far as they are known to me at present, may be briefly summarised as follows:—

1. *Buprestis gigantea*.—This species is more variable than the other; the form first known to the older authors comes from Cayenne, and may be considered as the typical condition of the species, and is the commonest in collections. The elytra are of a brilliant copper-colour, with the outer margin green, and the sutural region usually more or less green, but this latter point is very variable. The margins of the pronotum are broadly greenish, and but little shining, and along the middle there extends a band of the same colour, so that there is thus left a large patch on each side of darker colour—black or copper-black—and more shining surface; the green portions are densely punctate, the punctuation being of a double character, *viz.*, an extremely fine dense punctuation, and a more sparing and coarser, but still fine, punctuation, and these parts of the thorax bear a fine whitish depressed pubescence, while the discoidal patches are bare and polished, and their punctuation

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less dense; the female has, at the apex of the fifth ventral segment, a very slight emargination, a mere interruption of the outline. As the coppery colour of the wing-cases fades away, the form becomes of darker and more obscure colour, and it is, I believe, such dark specimens that are usually found at Rio de Janeiro, and in the females of these dark coloured specimens the minute notch of the fifth ventral segment becomes rather deeper and more definite.

The second form of *B. gigantea* differs from the preceding one in that the discoidal patches of the thorax are very conspicuous, but less shining than in the preceding one, and are surrounded by a very distinct coppery rim, inside the greener margins, and the punctuation of the thorax is a little less fine; the copper colour of the upper surface is very predominant, the general form is a little shorter and broader, and in the female, the notch on the fifth ventral segment is comparatively deep and conspicuous. I have a pair of this form from Pará on the Amazons, and a specimen sent me by H. Deyrolle with the locality Bogota (which is, however, I believe, incorrect). M. Deyrolle informed me that he had four other perfectly similar individuals of this form, and suggested that they were hybrids between *B. gigantea* and *B. goliath*. Although this form is that which in appearance and sculpture most resembles *B. goliath*, I see no reason at all to suppose the slight approximation to be the result of hybridisation, for in the more important characters there is no approach made to *B. goliath*.

The third form is remarkable by its colour, and by the very indefinite, almost entirely absent, discoidal patches of the prothorax; the colour is dark, but changes a good deal, according to the direction in which the specimen is viewed, from a dark purplish copper to a dark green. The upper surface of the prothorax is very polished and shining, and the punctuation is very much reduced, and there is little or no pubescence; on careful examination, however, the marginal punctuation is clearly seen to be present. The notch at the apex of the fifth ventral segment in the female is broad and shallow. This is the form that is most dissimilar from *B. goliath*, and it has been sent in numbers from Georgetown, Demerara, by the Rev. W. Harper. It is not, however, the only variety found in Demerara. The native Indians of that part of

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America use the wing-cases of this large beetle for ornament, piercing them with a hole at the humeral angle, and threading them so as to form anklets and armlets; on examining elytra taken from such an anklet, sent by Mr. Harper to the Museum at Thornhill, I find that the wing-cases have apparently been taken from the typical form of the species such as is found at Cayenne. Although, on account of its polished thorax and dark colour, this form appears very distinct at first sight, yet it varies somewhat towards the dark varieties of the typical form, and I have no doubt specimens may be found completely connecting the two. It is worthy of remark that in this form, owing perhaps to the diminution of sculpture, the head between the eyes is traversed by a quite distinct, acutely angulate transverse suture. This is all the more important, as Lacordaire has declared (Gen. Col. iv., p. 4, *note* 1), that "in the *Buprestidæ*, as in all the *Sternoxi*, without any exception, the epistome is never separated from the front by a distinct suture."

*Buprestis gigantea* shows numerous variations in the extent of the sculpture on the ventral segments, but this seems to be a less constant character than those I have mentioned above, except that in the third form the sculpture and pubescence on the ventral segment is always more diminished than in the other forms. In all specimens of the species the ventral segments are densely punctate at the base on each side, and the punctate portions bear a very fine pubescence; these patches of sculpture extend inwards, and so become more or less distinctly united to form a band across the base of each plate, and they also have a greater or less extension towards the hind margin of each segment.

2. *Buprestis goliath.* — According to the specimens before me, this species varies much in colour, somewhat in sculpture, and a little in the form and depth of the notch of the fifth ventral segment. The discoidal patches of dark colour are very distinct, and are dull, but in some of the more brilliantly coloured examples become slightly shining; these patches are always surrounded with a ring of coppery colour, which sometimes extends to the edges of the thorax, but in other cases shades off into green. In one individual from Chontales, the colour of all the upper surface is nearly black, and the metallic colour surrounding the discoidal

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patches is obscure. The usual colour of the wing-cases is obscure brassy or coppery, the outer margin being more metallic than the other parts; some individuals become of a brilliant copper colour. The ventral sculpture and pubescence is always largely developed, and exhibits but little variation. The notch on the fifth ventral segment of the female is always deep and very conspicuous, but it varies considerably in size, and more particularly in width; the angles at its hind margin are always acute, and tend to meet one another, but in some individuals are considerably more approximate than in others. The apex of the eighth dorsal plate in this sex is in this species always emarginate, but in some cases the emargination is very slight, while in others it is, though small, very distinct. So far as the material before me will enable me to judge, these variations are not geographical.

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## XVII. *Observations on the species of the Homopterous genus* Orthezia, *with a description of a new species.* By J. W. Douglas.

[Read July 6th, 1881.]

Having recently* examined the bibliography and synonymy of the known species of *Orthezia*, I do not further allude to this part of the subject; and having, at the June meeting of this Society, exhibited examples of all the three species hereafter mentioned, and communicated a note thereon,† I have now to offer a few more observations respecting them, with illustrative figures, and a description of one which I consider to be new. I have to premise that in all the stages of their existence all the species have a covering of cereous matter, which on the under side is close-fitting to the body, and on the upper side forms on the entire circumference a border of laterally connected laminations, varying in form in the different species, while on the dorsal surface the matter assumes a form and pattern varying, yet constant in character, in the respective species. The winged males are exceptions, being destitute of the wax-like envelope, and also the very youngest forms (which I have not seen) are without projecting laminæ, those of *O. urticæ* being so described by Léon Dufour.

### 1. *Orthezia urticæ*, Linn.

Up to the middle of October I find, on various plants, only young examples of both sexes, 1 line in length. I hesitate to call these larvæ, because if the account given by l'Abbe d'Orthez be true, that the winged males are developed and after coupling die, the females, which at that season exist only in the small forms represented by fig. 5, must then be fecundated, and afterwards have

* 'Entomologists' Monthly Magazine,' xvii., pp. 172 and 208 (1881).

† Proceedings, p. ix.



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an ecdysis, and be developed into the large adults found at the end of May on *Stellaria holostea*, when the large egg-pouch or marsupium, which has been originated in the meantime, is full of yellowish eggs (about thirty) enveloped in a fine cottony web or flue.

On the adult female, whose total length is $2\frac{1}{2}$ lines, there is first, a large, thick, bilobed projection over the head; conjoined to this, on the dorsal surface of the body, are two highly projecting parallel ridges, composed of seven or eight thick, subangular, backwardly directed, closely overlapping plates, leaving between the ridges a deep longitudinal furrow, which, like them, extends to the end of the body. The furrow is quite regular and smooth, but at the base of the ridges on the outer side is generally a series of small supplementary scales; by these ridges the segments of the body are quite hidden. The circumferential laminæ, starting at right angles to the base of the frontal projection, somewhat narrow and rounded on their anterior margin, directed backwards, project laterally, in regular succession, to a considerable extent, each lamina (on the sides) (6 to 7) showing a little beyond the one immediately preceding it, the posterior ones (three on each side) being greatly elongated, sometimes curved, and lying in the side grooves of the marsupium, but not above half their length, and the terminal middle one, arising just at the anal orifice, either lying depressed in the middle groove of the marsupium, or elevated at an acute angle. I am not sure if this elevation be a voluntary act on the part of the insect, nor if the lamina ever assume the procumbent position; often it is broken off, for all the laminæ are removable with the slightest touch.

The marsupium, consisting of cereous matter of a thin shell-like structure, formed (apparently) in two plates, at any rate easily separable into two, is attached at the base to the abdomen, but extends far beyond it; the lower plate convex; the upper one flattened, the space between them forming a large cavity in which the eggs are deposited and hatched. The lower plate arises immediately behind the posterior coxæ, and is perfectly smooth; the upper plate, constituting half the apparent length of the insect, has its surface deeply channelled lengthwise, the middle channel wide and rounded out, the others (three on each side of it) narrow, the intervening divisions thin, simulating laminæ, as I previously termed them.

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I have said that I hesitate to call the small autumnal
rms larvæ, and for this reason, that with the females I
so then find male forms of the same size (known by
e two projecting posterior laminæ), and if the females
then fertilised by winged males (as has been said),
ey cannot be in the larva-state. But it is equally
rtain that some males, at any rate, do not acquire
ngs in the autumn, for I find, at the end of May and
to the middle of June, some of the same forms as in
e autumn, and scarcely larger, along with the gravid
nales. Now, the question, is for what purpose have
ese males existed through the winter, and for what
rpose do they still exist? If they shall yet become
nged, what end can they then serve unless to attend
a generation of females at the present time unborn,
t which will also have, according to precedent, a
ntemporaneous generation of males? Or will they
ve the purpose of procreation without becoming alate,
d thus show that they are in the perfect condition, and
at, in this species at least, the male is dimorphous?
at winged males are very rare, we know; it may well
that only a few, at times, attain this perfection of
velopment; still, the existence of apterous males,
ether perfect or not, side by side with females having
rsupia already full of full-sized eggs, is a curious
bject for elucidation. It is scarcely a probable solution
at the said eggs have yet to be fertilised by males not
t developed. Are the females then, in some genera-
ns, agamous, or does parthenogenesis exist here?
There is an accessible figure of the winged male in the
ntispiece of Westwood's 'Introduction to the Modern
ssification of Insects.' The denuded female is figured
Léon Dufour in his 'Recherches sur les Hémiptères,'
ix., fig. 102.

### 2. *Orthezia cataphracta*, Shaw.

The form is broad-oval, the denuded body yellowish,
cereous covering matter cream-white. In the adult
nale—length 2 lines, including the marsupium—the
ntal node is bilobed, thick and not much projecting;
laminæ of the circumference short, all of equal
adth, curved under, the posterior ones only being
ittle longer than the others, forming altogether a
ed compact border. On the back, the segmentation

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is distinctly visible throughout, the cereous matter taking the form of each segment; the body in early life flat, afterwards distended; the segment next to the frontal node entire, the rest divided by a median impressed line, *on* which, in the first three of the divided segments, is a very small scutelliform nodule, and at the end of the line, immediately adjoining the laminæ of the circumference, is a short somewhat elevated lamina arising at the anal orifice and projecting over them. The marsupium is short (varying in length), broad, the posterior angles rounded off; the upper surface, arising below the circumferential border, but distinctly separate from it, nearly flat, having only eight or nine slightly raised longitudinal lines; the lower surface, arising at the posterior coxæ and hiding the abdomen, convex, perfectly smooth, the end curved upwards. Antennæ and legs pale piceous. Sometimes the upper surface, more rarely the lower also, assumes a smoky hue.

In the first days of April last, Mr. George Norman found, about the base of the stems of grass and *Carex* growing among long damp moss at Pitlochry, in Perthshire, some hibernated examples of this species, male and female, the latter having then no development of marsupium: these I failed to keep alive. In May, I received from the same gentleman, a supply of females with the marsupium partly, rarely fully, developed, and also two or three males. Some of these I managed to keep alive until the 12th of June, when a part of the females had the marsupium quite developed and full of white eggs, and a part still remained with only a small marsupium; the males being but little increased in size, and at most but 1½ line long. Mr. Norman tells me that young ones began to appear in the first week of June, and from the first had the scale-like covering. The same curious question also arises with this species as with *O. urticæ*, namely, why the males co-exist with the gravid females? and it is also unknown if any winged males ever appear.

3. *Orthezia Normani*, n. s.

♀. Corpus flavidum vel pallide piceum cera alba tectum; antennis pedibusque flavidis his interdum piceis; corporis laminis circumgentibus prominentibus quatuor primis latis planis antice rotundatis, vel quart

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ata, cæteris angustis; segmentis dorsalibus tribus quatuor anterioribus singulariter lamina lævi sub-ta medio valde emarginata fere divisa instructis, ris rectis nec vel lævissime laminatis; marsupio itudinaliter canaliculato.

ody yellowish or piceous, covered with white cereous ter; antennæ and legs yellowish, the latter some-s piceous, with the extremity blackish; frontal node sely angulated, the margins usually recurved so that middle appears sulcate; of the circumferential inæ the first four broad, flat, rounded on the front , projecting; or the first three only have this racter, the fourth being longer and curved outwards in fig. 12), the remainder narrower and straight, ering to and not separable from the elongate canali-tion of the marsupium; of the dorsal segments that the frontal node has an erect angulated lamina, the three or four have each a broad, delicate, suberect, ardly directed lamina, which is deeply cleft, almost ded, in the middle, so that each side appears with a tly rounded projecting edge; the other segments ight, with, at most, only a slight trace of lamination; ne anal orifice is a short lamina either lying flat or ntly elevated; the marsupium varies much in length, etimes being only half that of the rest of the insect, sometimes, but more rarely, as long as the other ion of the insect; the upper surface canaliculate, the er surface very convex, the end much recurved. gth 1½—2 lines.

have not seen a male form. There are small indi-als—1 line long—found with the females, but as all ve met with have a trace of a marsupium, they ot be males. The lamellation of this species is very ate, and so easily abraded that it is rare to get an ple quite perfect.

rly in April Mr. Norman sent me from Pitlochry specimens (which he found with *O. cataphracta*), the remark that the lamination differed from that of species, and in May he sent a further supply alive, it was evident he was correct in his observation. On 28th May, at Bexley Wood, Kent, I also had the ure of finding this species on a bank, among the s of grass and other plants and dead leaves and s; I have seen examples from Mr. C. W. Dale, and ve no doubt it exists in other collections. I have

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great pleasure in dedicating the species to him who, if not its discoverer, first pointed out its differential characters.

Finally, as will have been observed, there are several points in the natural history of these very remarkable insects that require to be cleared up, and, as I have no expectation that I shall ever do this, it is to be hoped that some of our younger members who have the time and opportunity may be induced to give attention to the necessary research.

Postscript.—I have just received the following note from Mr. Norman:—"Pitlochry, July 8th. I am sure you will be glad that I have at length bred the winged male of *O. cataphracta*. After having had the brood bottled up since the end of March, and having constantly added fresh-caught specimens, I was beginning to despair, but to day I found the one I now send to enable you to have it figured. I should mention that in the bottle are a few *O. Normani*, but the chances are a hundred to one in favour of this one being *O. cataphracta*."

The example may be described as follows:—

*O. cataphracta*, male.—Grey-white. Wings (two, anterior) diaphanous, at the base narrow, then immediately widening on the lower side, the whole contour being a long broad oval; close to the nearly straight anterior margin is a strong raised nerve, which ends at about the middle of the length; from this, at a little distance from the base, furcates a slight nerve directed towards the inner margin, but not reaching it, and becoming evanescent at about the same distance from the base as the strong costal nerve. The antennæ slender, filiform, about one-third shorter than the wing, the articulation obscured. Head, thorax, and abdomen also obscured by a white mealy powder; from the end of the abdomen projects a divergent pencil of about twelve white hairs, which is fully as long as the whole insect. The legs are also covered with the same kind of mealy powder, and there is a trace of it on the wings. Length, exclusive of tail, $\frac{1}{2}$ line; expanse of wings, $1\frac{3}{4}$ line.—J. W. D., 11th July.

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## Explanation of Plate XV.

| Fig. | | |
|---|---|---|
| 1. | *Orthezia urticæ*, Linn. | Female; upper side. |
| 2. | ,, ,, ,, | ,, lower side. |
| 3. | ,, ,, ,, | ,, side view showing the erect posterior lamina. |
| 4. | ,, ,, ,, | ,, marsupium with eggs. |
| 5. | ,, ,, ,, | ,, as found in autumn. |
| 6. | ,, ,, ,, | Male; as found in May. |
| 7. | ,, ,, ,, | ,, as found in May; lower side. |
| 8. | *Orthezia cataphracta*, Shaw. | Female; upper side. |
| 9. | ,, ,, | ,, lower side. |
| 10. | ,, ,, | ,, Male; as found 12th June. |
| 11. | ,, ,, | ,, ,, as found 12th June; lower side. |
| 12. 13. | *Orthezia Normani*, Doug. | Female; upper side. |
| 14. | ,, ,, ,, | ,, lower side. |
| 15. | ,, ,, ,, | ,, antenna. |
| 16. | *Orthezia cataphracta.* | Winged male. |

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## III. *Descriptions of new Asiatic diurnal Lepidoptera*

By F. Moore, F.Z.S., A.L.S., &c.

[Read July 6th, 1881.]

### SATYRINÆ.

*Lethe Todara*, n. s.

♂. Upper side dark olive-brown; both wings without rkings. Under side dark vinous-brown; fore wing h a transverse duplex subbasal and an oblique discal ved purple line, a submarginal row of five indistinct all ocelli encircled by a purple border, a marginal row purple line, the extreme outer margin being reous; hind wing with a transverse discal waved dially angled purple line; six submarginal ocelli ircled by a purple border, the first and fifth large l regularly formed, the second, third, and fourth, l duplex sixth narrow and minutely white-speckled; arrow marginal purple line and ochreous outer border. ♀. Upper side ochreous-brown, dusky externally; e wing with two ochreous-white, small, ill-defined, apical spots, and an oblique discal irregular band; d wing with three submarginal apical black spots, two lower slightly bordered externally with ochreous- te, above them is an ochreous-white apical spot; rginal line bordered with pale ochreous. Under side er; markings as in male, but more prominent, and with paler purple borders; fore wing with an oblique al ochreous-white band, which extends to the pos- or angle, the lower submarginal ocellus obsolete; reme outer margin of both wings ochreous. Expanse, le $2\frac{3}{10}$, female $2\frac{6}{10}$ inches.

*Hab.* Nilgiris. In coll. F. Moore.

This species is nearest allied to the Ceylonese *Lethe rpetis*, Hew.

### Tansima, n. g.

♀. Wings short, broad; fore wing with the costa ch arched at the base, apex rounded, exterior margin



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very slightly oblique and convex; cell broad; first and second subcostal branches emitted near end of the cell, third trifid; disco-cellulars outwardly oblique, upper bent near the subcostal, concave below, lower slightly concave anteriorly; radials emitted from their angles; hind wing broadly oval, exterior margin convex; cell broadly triangular. Palpi long, slender, pilose beneath; antennæ slender; legs slender, naked.

*Tansima Satyrina.*

*Lethe Satyrina*, Butler, Trans. Ent. Soc. Lond., 1871, p. 402.

*Hab.* Shanghai. In. coll. Godman and Salvin.

*Neope Khasiana*, n. s.

♂. Allied to *N. Bhadra*. Upper side: markings on fore wing similar, the two streaks within the cell much less distinct, that crossing its middle almost obsolete; the streak between the lower median and submedian narrower, and confluent with its terminal spot; hind wing ochreous-yellow, with the costal border and apical end of exterior border brown, the immediate base of the wing ochreous-brown; a large oval dark brown spot beyond lower end of the cell, and a discal curved series of six round spots decreasing in size to a minute spot above anal angle. Under side similarly marked to *N. Bhadra*, except that there are two subapical ocelli, the lower one situated between the upper and middle median veins; the three streaks crossing the cell are zigzag, and the posterior margin broadly ochreous; hind wing with a regular transverse subbasal ochreous-white fascia, the dark spot at end of the cell smaller and more prominent, the transverse series of ocelli also smaller, the interspace on both sides paler ochreous-brown. Expanse, 3¼ inches.

*Hab.* Khasia Hills (*Austen*). In coll. F. Moore.

*Callerebia Nada*, n. s.

♂ and ♀. Nearest to *C. Annada*. Exterior margins of both wings more convex. Upper side similar, the ocellus of fore wing comparatively more rounded. Under side similar; fore wing with the reddish patch somewhat

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broader, and extending to below the lower median vein; hind wing with less prominently grey strigæ; the transverse zigzag brown line distinctly formed and more erect, the two subanal ocelli larger and white-pupilled; above these there is an indistinct row of white spots. Expanse, male 2, female 2½ inches.

*Hab.* Kunawur, N.W. Himalaya (*Lang*). In coll. F. Moore.

*Callerebia Yphthimoides*, n. s.

♂ and ♀. Upper side dark olive-brown; fore wing with a bipupilled ocellus encircled by a narrow indistinct orange-yellow border; hind wing with two small subanal ocelli. Under side numerously covered with grey strigæ; fore wing with ocellus as above, and a slight brownish submarginal and a discal fascia; hind wing with three broader and more distinct transverse fasciæ, a small apical ocellus and four lower, smaller, decreasing ocelli. Expanse, male 1⅛, female 1⅞ inch.

*Hab.* Travancore, Colathoorpolay Patnas, 4000 ft., April (*Bourdillon*). In coll. F. Moore.

MYDOSAMA, Moore, Trans. Ent. Soc. 1880, p. 170.

*Mydosama marginata*, n. s.

♂. Allied to *M. patnia* (*Mycalesis patnia*), which also occurs in Sumatra. Fore wing less rounded at the apex; hind wing with more oblique exterior margin; both wings brighter ochreous; fore wing with prominent dark ochreous-black bands on all three sides; lower discal ocellus nearly obliterated by the band; hind wing with a prominent broad outer band, with a large ocellus between middle and lower median veins, and a minute ocellus between the latter and submedian. Under side light ochreous; both wings crossed by two medial slender red lines and a marginal series of ocelli, four and a lower blind minute spot on the fore wing, and seven on the hind wing. Expanse, 1⅝ inch.

*Hab.* Sumatra. In coll. Henley G. Smith.

NYMPHALINÆ.

*Apatura Bhavana*, n. s.

♂. Allied to *A. Ambica*. Differs in its larger expanse, the fore wing being more deflexed, and of less breadth

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across; the hind wing is also more produced at the anal angle. On the upper side the transverse discal white band is similar, but there are only two small apical white spots, and the exterior border of both wings has an unmarked fulvous-brown fascia. Under side also similar, the nacreous basal and external areas are bluer and are less black bordered, the apical band broader and showing the white spots more in its middle, and the discal fulvous band on the hind wing is narrower. Expanse, 3 inches.

*Hab.* N.E. Bengal (*Russell*). In coll. F. Moore.

*Herona Sumatrana*, n. s.

♀. Upper side brown; fore wing with a purplish bluish white longitudinal subapical streak between the veins, some irregular-shaped discal spots bordered above the posterior angle by lunular spots; hind wing with two outer discal transverse series of similar coloured irregular conical spots, and a marginal series of lunules. Under side brownish ochreous; fore wing with bluish white brown-bordered discoidal streaks, a broad brown-bordered oblique fascia beyond the cell, and three small subapical spots; discal spots as above; hind wing with a brown-bordered transverse medial zigzag line, and an indistinct discal whitish lunular fascia with brownish borders. Expanse, $2\frac{5}{8}$ inches.

*Hab.* Sumatra (*Bock*). In coll. Henley G. Smith.

*Limenitis Bockii*, n. s.

♂. Upper side vinous-brown, with a broad transverse medial white band, the inner border of which is sharply defined, the outer border traversed by a parallel lunular brown line, terminating at the apical end in three small white spots; both wings with a pale-bordered lunular submarginal and a narrower linear marginal band, both bordered with red at anal angle; fore wing with two discoidal reddish-centred sinuous black streaks, the inner continued beneath the cell. Under side purplish grey, the broad white medial band defined by a slender black inner line and a dark red outer line; fore wing with red costal base, centre of discoidal streaks and apical border dark red, the extreme apex being ochreous; hind wing

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with white-centred basal discoidal spots, and dark red anal patch. Expanse, 2⅜ inches.

*Hab.* Sumatra (*Bock*). In coll. Henley G. Smith.

Allied to the N. Indian *L. Dudu*. Differs in being a much smaller insect, and having a broader white transverse band.

*Neptis Anjana*, n. s.

♂. Upper side very dark olivaceous-brown; fore wing with a slender, but not very prominent, ochreous-brown narrow discoidal streak, a curved discal macular band, a submarginal and a less distinct marginal line; hind wing with a slender transverse subbasal band, a recurved discal band, and narrower but less distinct marginal line. Under side dark chestnut-red; fore wing with the discoidal streak, transverse outer bands glossy purplish blue, the lower part of the discal band being pale ochreous; hind wing with two medial, two discal bands, a very slender marginal glossy purplish blue and a broad paler basal band. Expanse, 2½ inches.

*Hab.* Moulmein. In coll. F. Moore.

Allied to *N. Ananta*.

*Neptis Kallaura*, n. s.

Allied to *N. Adipala*. Markings of upper side pale yellow; fore wing with the discoidal streak and its terminal pointed spot more rounded at the edges where divided by the disco-cellular vein; discal series of spots smaller and more oval; hind wing with comparatively narrower inner band and broader outer band. Expanse, male 2⅛, female 2⅜ inches.

*Hab.* Travancore, Kallaur Road, 1200 feet, April; Mynall, 2000 feet (*Bourdillon*). In coll. F. Moore.

*Neptis Carticoides*, n. s.

Allied to *N. Cartica*. Male differs from the same sex of that species in being somewhat smaller and of a fuliginous-brown colour, not black; markings similar, but of a pale fuliginous tint, and therefore less prominent; the subbasal band on the hind wing, and the

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lower discal spots on the fore wing only being whitish. Under side of a brighter chestnut colour, and the bands less prominent. Expanse, 2 inches.

*Hab.* Darjiling. In coll. F. Moore.

*Neptis Martabana*, n. s.

♂. Intermediate between *N. Columella* and *N. Ophiana*. From the former it is one-fourth smaller in size. From the Darjiling type of *N. Ophiana* it differs on the fore wing in having the discoidal streak more distinctly broken near the end, and in there being a wider space between its end and the large conical spot beyond. On the hind wing the subbasal transverse band is somewhat broader, and the submarginal spots smaller, more rounded, and less prominent. Under side of a much darker chestnut purplish brown, the markings showing out much more strongly. Expanse, $2\frac{3}{10}$ inches.

*Hab.* Rangoon. In coll. F. Moore.

*Neptis fuliginosa*, n. s.

♂. Allied to *N. Ebusa*, Felder. Upper side fuliginous olive-brown; fore wing with fuliginous olive-white slender discoidal streak, transverse discal interrupted macular band, and two slender submarginal lunular lines; hind wing with a broad subbasal and a discal band, a narrower less distinct slender intervening medial line, and an outer marginal line. Under side paler fuliginous-brown, with markings as above, but more prominent and whiter, the hind wing having also an additional subbasal band. Expanse, $1\frac{7}{8}$ inch.

*Hab.* Moulmein. In coll. India Museum, Calcutta.

*Neptis Batara*, n. s.

♀. Allied to *N. Miah* of N.E. Bengal. Upper side with similar markings, the discoidal streak being longer and more pointed at the outer end, the discal interrupted macular band slightly broader, the slender marginal line more distinct; the subbasal band on the hind wing broader, and the discal band of the same width as the subbasal is in *N. Miah*, the outer marginal slender band more distinct. Under side of a paler and duller purplish

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chestnut-brown, the bands broader, and of a paler ochreous tint. Expanse, 1⅞ inch.

*Hab.* Sumatra (*Buckton*). In coll. F. Moore.

*Rahinda Assamica.*

♂. Allied to *R. Heliodore* (*Neptis Heliodore*), Fabr. Upper side: fore wing with the red discoidal streak similar to that in *R. Hordonia*, not extending below the cell, the oblique subapical band somewhat narrow, the lower discal band scarcely constricted in its middle; hind wing with a broad subbasal and a discal band, the abdominal margin also broadly of the same red colour as the bands. Under side ochreous-yellow, with very narrow ochreous-brown intervening spaces between the bands. Expanse, 1¾ inch.

*Hab.* Sibsagar, Assam. In coll. India Museum, Calcutta.

*Rahinda Siaka.*

♂. Allied to the Javan *R. Tiga* (*Neptis Tiga*, Moore, P. Z. S., 1858, p. 4). Fore wing with reddish ochreous discoidal streak completely divided across end of the cell, and its lower margin sharply defined along the median vein; the three transverse discal patches well separated, the apical with a wide interspace, the submarginal formed of separate lunules; hind wing with a straight transverse subbasal (or inner) band, and a narrow submarginal band; marginal line very slender and indistinct. Under side with well defined dark dusky-blackish interspaces between the markings. Expanse, 1⅛ inch.

*Hab.* Sumatra (*Buckton*). In coll. F. Moore.

*Rahinda Sattanga.*

♀. Allied to the Malayan *R. Dorelia* (*Neptis Dorelia*, Butler). Upper side blacker, the markings paler, but with more sharply defined markings; fore wing with the discoidal streak entire, the subapical patch of equal width with that beneath it; submarginal band slender and lunular; hind wing with only two bands, both of which are straight, the submarginal band narrow and only half the width of the inner band; no marginal line. Expanse, 1¾ inch.

*Hab.* British Burmah. In coll. F. Moore.

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LYCÆNIDÆ.

*Narathura subfasciata.*

♂. Near to *N. Canuta* (*Amblypodia Canuta*, Hew.). Upper side glossy purplish blue; margins narrowly black. Under side pale greyish brown; fore wing with two very indistinct slightly darker submarginal fasciæ; hind wing with two similar lunular fasciæ, a broader discal zigzag fascia, and three or four small basal spots. Female of a more cobalt-blue tint, which is confined to the lower basal area of both wings. Expanse, 1½ inch.

*Hab.* Andamans. In coll. Hewitson, British Museum; and Henley G. Smith.

PIERINÆ.

*Appias Hippoides.*

Near to *A. Hippo*, typical specimens of which from Sumatra are before me. Upper side similar. Under side of a paler yellow, the apical spot on fore wing more prominently defined; hind wing with the marginal band narrower, and of one-third less in width. In *A. Hippo* the band reaches the end of the cell; in *A. Hippoides* it extends only two-thirds towards it. Female, similar above to *A. Hippo*. Under side: fore wing also similar; hind wing yellowish ochreous, with a well-defined marginal band of the same width as in male. Expanse, male 2½; female 2¼ inches.

*Hab.* N.E. Bengal (Assam, Silhet, Darjiling, Nepal). In coll. F. Moore.

*Appias latifasciata.*

♂. Upper side similar to *A. taprobana*. Under side also similar; apical spot on fore wing yellow; hind wing deep yellow, inclining to chrome; exterior band dense purple-brown, broad, three-eighths of an inch wide, and extending from the outer margin to the cell; a broad dense fascia formed of purple-brown scales from base of subcostal and extending broadly across the middle and over the borders of its two branches, and thus forming a prominent fascia; costal vein also lined with purple-brown scales; the interspace between the lower subcostal and the radial to the outer band almost white.

♀. Vinous-brown, with olivaceous-white broad subapical streak and discal area; the basal area of hi

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♂ also broadly olivaceous-white. Under side as in ♂. Expanse, 2½ inches.

*Hab.* Carara, Malabar, S. India. In coll. F. Moore.

A distinct species from the Bornean *A. Enarete*, Boisd.

PAPILIONINÆ.

*Papilio Pandiyana.*

Allied to *P. Jophon*. Male: fore wing narrower, with black streaks between the veins similar to those in *Diphilus*, the pale interspaces being fuliginous and of less whitish tint than in *P. Jophon*; hind wing with a broader whitish central patch, the white extending across the whole of the interspace between the veins; subcostal reddish lunules less prominent. Female with fore wing more rounded externally, the exterior margin being slightly convex; markings as in male. Expanse, male 4, female 4¼ inches.

*Hab.* Travancore (*Bourdillon*). In coll. F. Moore.

*Papilio Tamilana.*

Allied to the N. Indian *P. Paris*. Differs in the fore wing having a shorter transverse fascia, and the hind wing with a larger, longer, and broader blue patch, which extends hindward to the middle median vein. Expanse, 3 inches.

*Hab.* Malabar Hills, S. India (*Ward*). In coll. Moore.

HESPERIDÆ.

*Hesperia Hiraca.*

♂. Allied to *H. Irava* (*Hypæpa*, Hew.) Differs from the ♂ sex of that species in its smaller size. Wings dark brown; fore wing with a broad yellow zigzag spot across middle of the cell, a smaller nearly quadrate spot between the upper and middle median veins, and a larger obliquely-quadrate spot between them beneath the middle median. Under side: fore wing with spots as above; a cluster of yellow scales before the apex; hind wing with the medial area speckled with linear yellow scales. Expanse, 2⅝ inches.

*Hab.* Andaman Isles. In coll. Henley G. Smith.



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X. *On the* Lepidoptera *of the Amazons, collected by* Dr. James W. H. Trail *during the years 1873 to 1875.* By Arthur Gardiner Butler, F.L.S., F.Z.S., &c.

[Read July 6th, 1881.]

## Part IV.—GEOMETRITES.

E *Geometrites* collected by Dr. Trail consist of eighty- species, of which thirty are new to Science. I clude the *Uraniidæ*, notwithstanding Professor West- od's admirable paper, and in spite of the instructive ggestions as to the affinities of that family therein blished; and this I do, not from mere unthinking stinacy, but because I feel satisfied that the *Uraniidæ* m a passage from the *Bombycites* to the *Geometrites* per; unfortunately, owing to the confused state of classification of the moths, and the very few efforts ich have been made since the publication of Guenée's rk to render it more natural, it is impossible to guage urately the value of characters offered by the fect insects as against those exhibited in the adult va.

To my mind the imago forms of *Urania* and *Mania** ow greater affinities to the *Geometrites* than to the *mbycites*; and, until we know the youngest form of the va in these genera, we cannot positively assert that apparent affinity to the *Bombycites* exhibited by adult stage is reliable.

A natural classification of the moths would, I believe, ce the *Noctuites* near to the *Sphinges*, and therefore in nt of the *Bombycites*, the family *Notodontidæ* being ided into two distinct groups, the one typified by *uropus*, *Notodonta*, &c., showing greater affinities to *Noctuites*; the other, as represented by *Phalera*, to *Bombycites*: *Cerura* and allies may have to form hird family to be placed next to the *Drepanulidæ*;

* The alteration of this name to *Manidia* is unnecessary, since oner and Ochsenheimer's use of *Mormo* for the *Noctuid* genus been largely followed.



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the *Bombycites* could then be concluded naturally with *Asthenia* and the *Uraniidæ*, forming a passage to the typical *Geometrites*.*

Of the position of the *Pseudo-Deltoids*, *Deltoids*, *Pyrales*, and the confused mass of families arbitrarily associated under the term Micro-Lepidoptera, I need at present say nothing, excepting that their distribution amongst what have been called the higher groups must eventually take place.

URANIIDÆ.

URANIA, *Fabricius*.

1. *Urania leilus*.

*Papilio leilus*, Linnæus, Syst. Nat. ii. p. 750, n. 31 (1766).

Teffé, 18th December, 1874.

MANIA, *Hübner*.

2. *Mania empedocles*.

*Papilio empedocles*, Cramer, Pap. Exot. iii. pl. 199, figs. A, B (1782).

Juruapuca, Rio Jurua, 28th October, 1874.

URAPTERIDÆ.

RIPULA, *Guenée*.

3. *Ripula area*.

*Phalæna-Geometra area*, Cramer, Pap. Exot. i. pl. 56, fig. D (1779).

Rio Jurua, 7th November, 1874.

M. Guenée placed this species in *Urapteryx*.

Before proceeding to the next family it will be useful to correct some of the errors in published catalogues and lists.

*Chærodes transcendens* of Walker, and *Cimicodes castanearia* of Moore should be placed in *Mucronodes*.

* It might, however, be necessary to reverse this order on account of the affinity of the *Geometrites* to the *Noctuites*; thus the *Bombycites* would come after the *Geometrites*.

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*Gynopteryx gygearia* is allied to *Cimicodes torquataria*, of which *Gynopteryx liodesaria* is evidently a variety; *G. ? celeraria* (= *prælataria*, H.-Sch.), is unquestionably nearly allied to Guenée's *Cimicodes pallicostata*.

*Clysia succedens* is a *Lycimna*; *C. mixtipennaria* would be better placed in *Eutrapela*, although somewhat aberrant even for that genus, and *C. decisaria* is an *Endropia* near to *E. peetinaria*.

*Chærodes transponens* of Walker is a slight variety of *Oxydia vesulia* of Cramer, but the specimen miscalled *O. vesulia* by Dr. Herrich-Schäffer (and nevertheless labelled with a MS. name of his own), is clearly *O. agliata* of Guenée, whilst the examples placed under the latter species by Walker are again varieties of *O. vesulia* of Cramer.

Guenée's first group of *Oxydia*, consisting of *O. vulpecularia* only, may retain the generic name *Acrosemia* proposed for it by Dr. Herrich-Schäffer; the marvellously simple antennæ of both sexes will at once separate it from the next species, *O. capnodiata*, which is wrongly associated with *O. bendiata* under Group II.

*Oxydia capnodiata* is clearly a very slight variety of Walker's *Herbita aglausaria*, and may therefore stand as *Herbita capnodiata*.

*Oxydia bendiata* is allied to *Chærodes translineata*, and to *Acrosemia decurtaria* of Herrich-Schäffer, which is (if more than a variety) a local form of Walker's *Ira atomaria*; these species, which nearly approach *Acrosemia vulpecularia* in structure, may be placed under Walker's genus *Ira*.

If I have rightly identified them, Guenée's *O. hispata* and *O. distichata* may be only well-marked varieties of *O. vesulia*; Walker included all three under the name of *O. agliata*: *Chærodes translinquens* of Walker is an *Oxydia*, and probably *O. nimbata* of Guenée, the description of which it agrees fairly well with.

Under the specimens sent by Dr. Herrich-Schäffer as *O. trapezata*, and agreeing with Walker's *Mucronodes mundipennata*, I recognise examples of the form named *O. trychiata* by Guenée.

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CIMICODES, *Guenée*.

4. *Cimicodes gygearia*.

*Gynopteryx gygearia*, Walker, Cat. Lep. Het. xx. p. 96, n. 8 (1860).

Teffé, 19th October, 1874.

I think it very doubtful whether the genus *Cimicodes* really belongs to the family *Urapteridæ*.

The genus *Andania* of Walker certainly does not belong to this family, being identical with *Syngria* of Guenée. I found *S. druidaria* and *S. falcinaria* mixed with the specimens of *Andania scitosignata*, other examples of the latter species being recorded as *S. druidaria* in the collection. *Andania scriptipennaria*, on the other hand, is closely allied to *Lagyra* (female form of *Hyposidra*) and is the *Azelina? claustraria* of Felder.

ENNOMIDÆ.

PYRINIA, *Hübner*.

5. *Pyrinia optivata*.

*Crocopteryx optivata*, Guenée, Phal. i. p. 72, n. 94 (1857).

Near end of Ilha de Botya, Rio Solimoes, 15th October, 1874.

Closely allied to *P. cæaria*, from which it differs chiefly in the absence of the silvery stripe across its wings.

The following genus should certainly be placed near to *Pyrinia*, *Drepanodes*, and *Gargaphia*, and not where Walker put it, near to the end of the family:—

HALESA, *Walker*.

6. *Halesa asychisaria*.

*Halesa asychisaria*, Walker, Cat. Lep. Het. xx. p. 211, n. 1 (1860).

Rio Jurua, 4° 40′ S., 66° 40′ W., 29th October; Pupunha, 5th November, 1874; Boaventura, Rio Jutahi, 21st January; above Rio Curuem, 29th January, 1875.

This species was subsequently described by Snellen as *Falcinodes gonodontaria*.

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7. *Halesa glauca*, n. s.

Wings above shining violet-grey, rather more rosy towards the external borders; primaries crossed at basal third by an olivaceous stripe beginning in a triangular costal patch of the same colour; a broad olivaceous band beyond the middle, slightly narrowing towards the inner margin, and bounded externally by an elbowed leaden-grey line beginning in a short oblique creamy whitish costal dash; costal border creamy whitish; external border sometimes well defined and purple towards the external angle, its inner edge zigzag; fringe ferruginous; secondaries crossed before the middle by a rather broad olivaceous band, which is limited externally by a central leaden-grey line; the latter terminates upon the abdominal border in a creamy whitish dash; external border purplish, ill-defined; fringe ferruginous; thorax pale violet-grey; abdomen pale greyish brown; antennæ, palpi, and upper surface of legs buff; under surface silvery grey, striated with pale lilacine-grey; primaries with pale buff costal margin; an oblique white discal line; external area towards the angle purplish; fringe testaceous; secondaries whiter than the primaries, with well-defined purplish external border; costal border tinted with buff; fringe golden ferruginous; body and legs below whitish; expanse of wings, 1 inch 3 lines.

Uruçaca, Rio Jurua, 7th November, 1874; Boaventura, Rio Jutahi, 24th January; Boa Vista, 1st February; Santarem, 4th February, 1875.

It is just possible that this may be the *Phalæna violacea* of Sepp, but I think not; his figure is evidently a very poor one, whatever it is meant for.

CRATOPTERA, *Guenée.*

8. *Cratoptera brunnea*, n. s.

Sandy testaceous, the wings with the outer half washed with reddish, which becomes more intense towards the external borders, the whole surface irrorated with black; a dark olive-brown oblique line from the apex of the primaries to just above the middle of the abdominal border of secondaries; primaries crossed at basal third by an elbowed slender dark brown line; two very oblique dark brown costal dashes, the first from the middle of

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the costal margin, and the second near to the apex, where it bounds an elongated semi-pyriform costal spot, mottled with brown and edged below with whitish; apex and a disco-cellular dot black; one or two vague dusky spots on the disc; fringe tipped with dark brown; secondaries with a discal indistinct bisinuated series of dusky spots; fringe tipped with red-brown; under surface bright ochreous, speckled and mottled with grey, excepting on the body and towards the base of secondaries; wings crossed by a dark grey oblique stripe corresponding to the olivaceous line of the upper surface; discal diffused spots not extending below the third median branch of the secondaries; primaries white, speckled with grey at apex; body paler than the wings; palpi reddish brown; expanse of wings, 1 inch 5 lines.

Rio Jurua, near the mouth; 14th November, 1874.

9. *Cratoptera primularis*, n. s.

Nearly allied to *C. vilaria* of Herrich-Schäffer, and to *Drepanodes* (!) *pholata* of Guenée; in shape it more nearly agrees with the former, but in markings (excepting the absence of the subbasal line on the primaries) it is like the latter species; bright chrome-yellow; the wings crossed from apex of primaries to the middle of the abdominal margin of secondaries by an externally diffused bright red oblique line; this line is elbowed close to the apex of the primaries, and bounded externally by five small pure white spots upon the nervures; fringe at apex black; wings below of a clearer yellow colour than above, and crossed by a rather broad oblique black band with reddish diffused edges; external area sparsely speckled with black; primaries with four black dots in a zigzag series within the discoidal cell; body below whitish; expanse of wings, 1 inch 1 line.

Rio Jutahi, 5th February, 1875. Taken at light.

There can be no question that this is congeneric with *C. vilaria*, and it is hardly possible that the *Drepanodes pholata* of Guenée, which has almost the same pattern on both surfaces (a pattern, moreover, which on the under surface is singularly striking) can belong to a different genus. I am therefore unwillingly compelled to believe that here, as in several other instances, this

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great lepidopterist has failed to recognise the real differences between genera which he himself described.

Two other species, *Gynopteryx ? calexaria* and *G. ? icaunaria*, must also be referred to *Cratoptera*; the *Apicia prostypata* of Snellen is a *Gynopteryx*, his *A. plebeiata* being characteristic of *Apicia*.

GYNOPTERYX, *Guenée*.

10. *Gynopteryx vulgaris*, n. s.

Allied to *G. arbuaria* (*Apicia arbuaria*, Wlk.), greyish, reddish or yellowish brown, densely mottled with fine grey striations; two bright rust-red or reddish brown lines of the usual form; the inner one restricted to the primaries rather more irregular and nearer to the outer line than in the other species; the outer line acutely angulated and bounding a partly white and partly black-edged arched costal spot near apex; the area between the two lines paler than the rest of the wing; a black disco-cellular spot; a zigzag discal series of more or less distinct whitish-edged grey spots; secondaries with the discal series of spots extremely indistinct; under surface whitish or pale rusty-brown, mottled with grey striations; with conspicuous black disco-cellular spots; a testaceous stripe just beyond the cell; a zigzag submarginal series of whitish-bordered grey spots scarcely indicated on the secondaries, excepting by a darker shade of the ground colour; apex of primaries whitish; expanse of wings, male 1 inch 1 line, female 1 inch 2 lines.

Male, S. Guajara, mouth of Rio Purus, 6th September; male and female, Gepatiny, 26th and 29th; male, Mabidiry, 30th; Urucuri, 2nd October; female, Curimata, Rio Jurua, 30th; Pupunha, 1st to 7th November; Gaviao, 10th; Rio Javary, 2nd December, 1874.

Dr. Trail obtained five males and ten females of this species; it varies much in tint, but the modifications not only occur in different localities, or at different times, but also in specimens taken together, so that they cannot even be separated as local races.



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TETRAGONODES, *Guenée.*

11. *Tetragonodes anopsaria?*

*Tetragonodes anopsaria*, Guenée, Phal. i. p. 80, n. 113 (1857).

Female, Rio Jurua, 24th October, 1874.

Is not Cramer's *Phalæna croceata* congeneric with this species?

MAGIDA, *Walker.*

12. *Magida aurantiaca*, n. s.

Bright orange-fulvous, mottled with ferruginous; primaries with the central area rather paler; a slightly irregular ferruginous stripe from the middle of the costal margin of primaries to just below the middle of the abdominal margin of secondaries; primaries with the costal margin striated, and spotted at the origin of the transverse stripes with black; two closely appproximated irregular red-brown discal stripes, the external border also brownish and mottled with black; fringe black; secondaries with a submarginal ferruginous stripe, very slender, excepting towards the costal margin; fringe black at apex, otherwise yellow; antennæ and a band across the back of the head grey; under surface clear golden yellow, the markings bright sienna-red instead of ferruginous; otherwise as above; expanse of wings, 8½ lines.

Fonteboa, Rio Solimoes, 17th November, 1874.

The genus *Magida* is nearly allied to *Melinodes*.

HYPERYTHRA, *Guenée.*

13. *Hyperythra decrepitaria.*

*Syrrhodia decrepitaria*, Hübner, Zutr. Exot. Schmett., figs. 371, 372 (1823).

*Aspilates decrepitaria*, Guenée, Phal. ii. p. 184, n. 1218 (1857).

*Hyperythra mimasaria*, Walker, Cat. Lep. Het. xx. p. 132, n. 15 (1860).

Serpa, 22nd April, 1874.

It seems scarcely possible that Guenée can have looked at Hübner's figures of this species; the moth is so utterly unlike an *Aspilates* that even Mr. Walker quotes it with a note of interrogation.

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NEMATOCAMPA, *Guenée.*

14. *Nematocampa arenosa*, n. s.

Wings above sandy yellow, speckled with red-brown; the disco-cellulars dark brown; primaries crossed just before basal third by an angulated black-brown stripe, and at external third by a sinuous stripe, beyond which is an angulated line of the same colour; external angle slaty grey, crossed transversely by a blackish-edged ochraceous band; faint indications of a slender blackish submarginal line, beyond which the nervures are black; secondaries crossed beyond the middle by an arched dark brown line; external area testaceous; apex and base of fringe slaty grey; primaries below pale stramineous, with the same dark brown lines as above; area between the discal and angulated subapical lines slaty grey, traversed by a sinuous testaceous stripe flecked with grey; secondaries rather paler than the primaries, dark brown markings scarcely perceptible; apex broadly slaty grey; external border and base of fringe greyish; body below pale creamy yellowish; expanse of wings, 9 lines.

Rio Jurua, 6th November, 1874.

Nearest to *N. resistaria*.

15. *Nematocampa reticulata*, n. s.

Stramineous; wings above striated with dark brown; the nervures, a line before the basal third, an irregularly angulated line beyond the middle, and a regularly angulated discal line limiting the external area, dark chocolate-brown; external area very broad, occupying nearly half the secondaries and about a third of the primaries, chocolate-brown washed with shining plumbageous-grey; a large apical stramineous patch striated with brown on the primaries; under surface paler, most of the brown markings on the basal two-thirds obsolete; only the external third of all the wings dark and of a smoky greyish colour; body cream-colour; expanse of wings, 1 inch 1 line.

Pupunha, Rio Jurua, 1st November, 1874. Taken at light.

Seems to be allied to *N. varicata* of Walker.

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ENDROPIA, *Guenée*.

16. *Endropia singularis*, n. s.

General aspect above of "*Hygrochroa*" *davalliata*, Felder (a species of *Mucronodes*), but allied to "*Hyperythra*" *angulifascia*; whity brown; primaries above crossed by two brown-edged angular greyish bands, the inner one interrupted, near the base of the inner margin, by a very oblique brown-edged whitish dash; a subapical triangular white-bordered costal olive-brown spot only separated by its outer border from a notched subcuneiform patch of the same colour on the outer margin; a patch of creamy white below the last mentioned patch of brown; secondaries crossed from costa to internomedian area by a tapering brown streak; basi-abdominal and apical areas washed with reddish brown; a white-bordered blackish-edged creamy yellowish spot on the abdominal border near the anal angle; body testaceous; tegulæ white, crossed by a dull ferruginous stripe; primaries below greyish brown, with the internal half, excepting towards the external angle, cream-coloured; an arched, almost semicircular, white submarginal line, forked externally towards the apex; apical area dark brown internally, testaceous externally; fringe whitish; secondaries creamy whitish, with the basi-costal area and abdominal border sandy yellowish; two sinuous chocolate-brown lines from the middle of the costa to the abdominal border, filled in with brown above the radial vein, and immediately followed by a pure white stripe which bounds the external border; the latter brownish testaceous; fringe white, spotted with brown towards the anal angle; body below whity brown; expanse of wings, 1 inch 4 lines.

Obydos, 8th March, 1874.

A most singularly marked species, but I think without doubt belonging to this genus.

AZELINA, *Guenée*.

17. *Azelina pumaria*.

*Pergama pumaria*, Felder and Rogenhofer, Reise de Nov., Lep. v. pl. cxxiii. fig. 15 (1876).

Gepatiny, Rio Purus, 29th September, 1874. At light

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This species belongs to the section *Synemia* of Guenée, which the projecting apical portion of the outer mar- is straight instead of being more or less sinuated.

18. *Azelina garuparia.*

♀. *Azelina garuparia*, Felder and Rogenhofer, Reise der Nov., Lep. v. pl. cxxiii. fig. 21 (1876).

♂. Boa vista, Rio Jutahi, 1st February, 1875. At ht.

19. *Azelina trailii.*

*Azelina trailii*, Butler, Ann. & Mag. Nat. Hist., ser. v. vol. viii. p. 31 (1881).

Pariti, Rio Purus, 5th October, 1874. At light.

20. *Azelina lustraria.*

*Azelina lustraria*, Guenée, Phal. i. p. 156, n. 242 (1857).

Pupunhazinho, Rio Jurua, 8th November, 1874. At ht.

21. *Azelina clysiaria.*

*Azelina clysiaria*, Felder and Rogenhofer, Reise der Nov., Lep. v. pl. cxxiii. fig. 12 (1876).

Rio Javary, 4th February; Guajaratuba, Rio Purus, h September; Rio Solimoes, 20th November, 1874; Jutahi, 27th January and 5th February, 1875.

22. *Azelina juruana.*

*Azelina juruana*, Butler, Ann. & Mag. Nat. Hist., ser. v. vol. viii. p. 43 (1881).

Curimata, 30th October; Rio Jurua, 7th November, 4.

Brotis, *Hübner.*

23. *Brotis vulneraria.*

*Brotis vulneraria*, Hübner, Zutr. Exot. Schmett., figs. 319, 320 (1823).

Rio Madeira, west bank, about 5° 30′ S., 16th May; Javary, 1st, 3rd, and 7th December, 1874; Boaven-, Rio Jutahi, 24th January, 1875.

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This species is very variable, both in the tint of the wings, which may be of either a rich brown or silver-grey colour, and in the presence or absence of the triangular orange costal spot on the primaries.

The following corrections may be made to the *Ennomidæ*, in addition to those already noted:—*Caberodes ? carcearia* may be referred to *Gynopteryx*; *Apicia ? liberaria* may be referred to *Tacparia*; one of the specimens of *T. zalissaria* is referable to *Apicia deductaria*; *Gynopteryx ? calbisaria*, although it has almost the same pattern as *G. seriaria*, agrees better in structure with *Apicia*; *Melinodes ? amphisaria* is a *Pyrinia*; *Epione liboraria* is identical with *Tephrina confiniaria*; *E. ? brongusaria* is close to (if distinct from) *Tephrina incessaria*; *E. ? roseigera* is probably an *Ephyra*, but with the aspect of *Anisodes*; it certainly is not allied to *Epione*: "*Epione*" *serinaria*, *agyllaria*, and *cambogiaria* are allied to *Sicya solfataria*; it is probable that the so-called "South African" species is from the New World.* *Hyperythra arcasaria*, of which we have a specimen from Canada, is probably *Antepione depontanata* of Packard's 'Monograph'; *H. angulifascia* is nearer to *Endropia*, but several of the Indian species will have to be turned out of *Hyperythra*, such as *H. ? riobearia* and *calcearia*; *H. ennomosaria* is a *Caustoloma*; *Hyperetis alienaria* is an *Anisodes*; *Ellopia inflectaria* and *E. convexaria* are slightly abnormal species of *Sicya*; although they come from Africa, they are so unlike *S. cambogiaria*, and the latter is so like the N. American species that they rather strengthen than weaken my belief that that species is American; the genus *Ennomos* is in utter confusion, the species being referable to half a dozen genera; *E. ? potentaria* is a *Colussa* (*Lasiocampidæ*).

BOARMIIDÆ.

BOARMIA, *Treitschke*.

24. *Boarmia bipennaria*.

*Boarmia bipennaria*, Guenée, Phal. i. p. 257, n. 395; pl. 13, fig. 5 (1857).

Pupunha, Rio Jurua, 1st November, 1874. At light.

* According to Messrs. Grote and Robinson, *E. agyllaria* is = *E. calipusaria*. The latter is *Sicya solfataria*, but (in my opinion) is distinct from *E. agyllaria*.

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The figure is not a very good one, but the description happily corrects it where in error.

ALMODES, *Guenée.*

25. *Almodes stigmaria.*

*Boarmia stigmaria*, Walker, Cat. Lep. Het. xxi. p. 363, n. 64 (1860).

Rio Trombetas, 3rd March; Rio Jurua, 13th November, 1874.

I have no doubt that *Almodes* is very closely allied to *Boarmia*, and cannot understand why Guenée placed it between genera so utterly dissimilar as *Mecoceras* and *Eumelea*.

TEPHROSIA, *Boisduval.*

26. *Tephrosia? cretacea*, n. s.

Dull white, minutely irrorated with grey; wings crossed by two subparallel slightly arched and widely undulated pale testaceous stripes; external border rather broadly pale brownish grey, its inner border interrupted by a regular series of white-bordered slightly darker spots; a marginal series of black dots; a blackish dot at the end of each discoidal cell; primaries with a very indistinct third testaceous stripe at basal fifth, all three stripes on these wings commencing upon the costal margin in small black spots; under surface sordid white; wings with slender brown disco-cellular striæ; a rather broad greyish brown external border; fringe and the apex of the primaries snow-white; expanse of wings, 1 inch 6 lines.

Prainha, 14th November, 1873.

This very distinct species is unfortunately represented by only one headless specimen, so that for the present it is impossible to decide with absolute certainty whether it is a *Tephrosia* or a *Boarmia*; the pattern is more like that of the former genus; it seems allied to *T. incongruaria* of Rio Janeiro.

The two genera *Boarmia* and *Tephrosia* are at present in a state of great confusion, fully bearing out M. Guenée's remarks (first as to *Boarmia*), "Voici un genre très-ancien, universellement adopté, et cependant jusqu'ici assez mal limité"; and (secondly as to *Tephrosia*), "Les

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caractères de l'insecte parfait ne sont pas, en effet, très tranchés."

The fact is that the antennæ of the males ought to have been regarded as the most important character for distinguishing these groups, those of *Boarmia* being broadly pectinated, and those of *Tephrosia* narrowly pectinated, or, in exceptional cases, almost simple; these are broad distinctive characters, but it may be necessary, in strictly attending to them, to break up *Tephrosia* into two genera.

GEOMETRIDÆ.

NEMORIA, *Hübner*.

27. *Nemoria iris*, n. s.

Near to "*Geometra*" *remotaria* of Walker; wings apple-green, crossed by an oblique tricoloured stripe from the costal margin near the apex of primaries to the external third of abdominal margin of secondaries; this stripe is golden green internally, yellow in the centre and pure white externally; a black dot at the end of each cell; fringe yellowish green at base, and tipped with white, the central line being apple-green; primaries with a second stripe at basal third transverse, golden green externally, and yellow (narrowly edged with white internally; costal border snow-white, the extreme margin barred with red-brown; body white, collar yellowish tegulæ green; primaries below pale apple-green, crossed obliquely by an ochreous line; a black dot at the end of the cell; fringe and edge of costal border as above; secondaries green, washed with silvery white; body white; expanse of wings, 1 inch.

Uricurituba, Rio Tapajos, 17th March, 1874.

JODIS, *Hübner*.

28. *Jodis opaca*, n. s.

Deep apple-green; wings crossed beyond the middle by a nearly straight stripe, which does not reach the costal margin of the primaries, its inner half testaceous, its outer half greenish white; fringe white, traversed by a green line; primaries with a slender yellow costal margin speckled with blackish; a black dot at the end of the cell; an indistinct nearly straight stripe across

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basal third; head, collar, and abdomen (excepting s base) yellow; a stripe across the vertex, the basal t of the antennæ and their upper edge white; naries below rather paler green than above; a broad al slate-coloured belt, beginning at the upper radial and expanding to the outer margin below the second lian branch; an apical dot of the same colour; base ringe and costal border yellowish; a black dot at the of the cell; secondaries shining greenish cream-ur, crossed by two arched diffused green bands losing subquadrate slate-coloured spots; body below e creamy pink; expanse of wings, 1 inch 3 lines.

antarem, Rio Jutahi, 4th February, 1875. At light.

his beautiful species appears to come nearest to *emoria*" *bryata* of Felder.

TACHYPHYLE, n. g.

llied to *Jodis* and *Phyle*; wings elongate-triangular, primaries being almost rectangled triangular, the ondaries much prolonged at anal angle; head and rax large and robust; antennæ rather short, pecti-ed for about two-thirds of their length; palpi pro-ing slightly in front of the head; legs compressed, rather short tibial spines; abdomen rather short, rcely longer than the thorax (not including the head). e, *T. acuta.*

29. *Tachyphyle acuta*, n. s.

eep apple-green; wings crossed beyond the middle n oblique creamy white stripe, from apex of primaries below the middle of the abdominal margin of ndaries; fringe white, with a dull greenish basal ; primaries with a black dot at the end of the cell; int indication of a transverse whitish line at about basal third; secondaries with yellowish abdominal ge; vertex of head snow-white; face and antennæ n-coloured; collar yellow; thorax green; abdomen ow (possibly faded, or changed from green or white); s white; primaries below paler green than above, oming whitish towards the outer margin; a black dot he end of the cell; secondaries sericeous greenish e; legs flesh-coloured, the tibiæ spotted at both



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extremities with black; body below white; expanse of wings, 1 inch 1 line.

Rio Solimoes, near Santa Cruz, 7th December, 1874.

This singularly triangular species seems to be allied to the *Phalæna pigraria* of Sepp (Surin. Vlind. pl. 16).

DYSPTERIS, *Hübner*.

30. *Dyspteris inæquaria*.

*Dyspteris inæquaria*, Guenée, Phal. i. p. 368, n. 571 (1857).

*D. diminutaria*, var., Walker, Cat. Lep. Het. xxii. p. 558, n. 3 (1861).

Prainha, Rio Jurua, 1st and 7th November, 1874.

EUCROSTIS, *Hübner*.

31. *Eucrostis expulsata*.

*Eucrostis expulsata*, Walker, Cat. Lep. Het. xxii. p. 566, n. 3 (1861).

Gaviao, Rio Jurua, 10th November, 1874.

COMIBÆNA, *Hübner*.

32. *Comibæna ocellata*.

*Phalæna-Geometra ocellata*, Stoll, Suppl. Cramer, p. 156, pl. 34, fig. 9.

Rio Javary, 5th December, 1874.

Congeneric with *C. bajularia* and *Racheospila margini-plaga*.

RACHEOSPILA, *Guenée*.

33. *Racheospila miccularia*.

*Racheospila miccularia*, Guenée, Phal. i. p. 374, n. 599 (1857).

Rio Jurua, 4° 40′ S., 66° 40° W., 20th October, 1874.

One much broken example of this rare species was taken at light; it is quite new to the National collection.

APLODES, *Guenée*.

34. *Aplodes malina*, n. s.

Nearly allied to *A. mimosaria* and *glaucaria*; apple-green; wings above crossed by three undulated rosy white

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lines, the first at basal two-fifths sinuous, the second and third subparallel, angulated, the third submarginal, broken up into spots and >-shaped lines; fringe with a whitish basal line; antennæ and crest silvery white; wings below greenish white; body silvery white; expanse of wings, 7 lines.

Rio Jutahi, 27th January, 1875. At light.

A second specimen, apparently conspecific, though faded white, was obtained at Pupunha, Rio Jurua, on the 1st November, 1874.

The following corrections should be made to this family:—*Geometra subvectaria*, Walker, is *Numia luxaria*, Guenée; *G. factaria* is *N. terebintharia*, Guenée, and *G. difissa* and *subcelata* are also species of *Numia*; *G. reciprocata*, *viridiluteata*, *dimissa*, *luteoviridata*, and *subignita* are species of *Tanaorhinus* (of which *G. confuciaria* is the type); *Nemoria translucidaria*, Herrich-Schäffer, would be better placed in *Amaurinia*, but *Thalassodes diserta*, Walk., which is the *Amaurinia rubrolimbaria* of Guenée, should be referred to *Thalera*; *Chlorochroma congenita*, Walker, is the female of his *C. vertumnaria* and = *Omphax plantaria*, Guenée; *C. externa*, Walk., is also a species of *Omphax*.

## MECOCERIDÆ.

### Mecoceras, *Guenée.*

### 35. *Mecoceras nitocris.*

*Phalæna-Geometra nitocris*, Cramer, Pap. Exot. iii. p. 148; pl. 275, fig. A (1782).

Forest behind Arimanahy, 9th January; Lake Arapicu, Rio Trombetas, 3rd March; Boa vista, Rio Purus, 12th September, 1874; Manaos, 3rd January, 1875.

## PALYADÆ.

### Ophthalmophora, *Guenée.*

### 36. *Ophthalmophora formosanta.*

*Phalæna-Geometra formosanta*, Cramer, Pap. Exot. iii. p. 92, pl. 247, fig. G (1782).

Rio Negro, 4th July, 1874. Taken at light.

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The examples from Santarem, placed by Walker under this species, are referable to *O. corinnaria* of Guenée.

CHRYSOCESTIS, *Hübner*.

37. *Chrysocestis pœcilmidia*, n. s.

Allied to *C. fimbriaria* of Cramer, from which it differs in having the external border of only half the width, and consequently with only one submarginal series of *embossed cupreous* spots; in *C. fimbriaria* these spots are more silvery, and there is a second inner series of almost confluent, but not embossed, silvery spots, which, when looked at from the front, form a greyish brown band limiting the external border; the present species is of the same semitransparent pearly white colour, with metallic golden costal border, orange external border enclosing the submarginal cupreous spots, and white fringe having a slightly plumbageous shot; antennæ golden testaceous; below, the margins of the wings are pale brassy yellow, the submarginal spots of the upper surface being replaced by a series of dark grey spots; expanse of wings, 10 lines.

Amazons. (No exact locality or date given).

Walker confounded two examples of this moth (which were received from Honduras) with Cramer's species; he also described, as the *C. institata* of Stoll, five examples of *Berberodes conchylata* of Guenée, at the same time placing an example of *C. institata* among the specimens referred to *C. fimbriaria*, in which I think he was probably not far out, since it is doubtful whether the two forms are more than variations of one species.

Lastly, Walker's *C. bisignata* is only the female of Guenée's "*Berberodes*" *gibbiferata* which that author ought to have separated as a distinct genus.

EPHYRIDÆ.

NUMIA, *Guenée*.

38. *Numia? flava*, n. s.

Gamboge-yellow; wings with the external two-fifths testaceous; a marginal series of grey spots; a zigzag discal series of grey spots; primaries with two testaceous dots at the end of the cell; a dot in the cell and two on the costal margin orange; palpi, back of head, and

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collar washed with orange; abdomen buff-coloured; wings below darker than above, more uniform in colouring, grey spots ill-defined; body below creamy yellow, washed in front with orange; anterior tarsi blackish above; expanse of wings, 1 inch 1 line.

Rio Jurua, near the mouth, 16th November, 1874.

Notwithstanding its yellow, instead of green, coloration, this seems to belong to the genus *Numia*.

EPHYRA, *Duponchel.*

39. *Ephyra rudimentaria.*

*Ephyra rudimentaria*, Guenée, Phal. i. p. 407, n. 657 (1857).

Teffé, 18th October, 1874. Taken at light.

M. Guenée says that the cellular marking is not ocellated, but in Walker's type, and in the example taken by Dr. Trail, it is very distinctly pupillated with white.

40. *Ephyra rubripennis*, n. s.

Bright rust-red, washed with a tint of lake-red towards the outer margin, and with lilacine on the costal border of primaries; the whole surface irrorated with minute dark grey striations; antennæ grey; thorax washed with lake-red; under surface creamy pale buff; wings with a rather broad dull rose-coloured external border; a blackish dot at the end of each cell; expanse of wings, 11½ lines.

South bank of Rio Negro, 16th June, 1874. At light.

Allied to *E. proditata*.

ANISODES, *Guenée.*

41. *Anisodes lateritiaria ?*

*Zonosoma lateritiaria*, Herrich-Schäffer, Auss. Schmett. pl. 59, fig. 332 (1850—58).

Ilha das Araras, 3rd June, 1874. At light.

The identification of this species must remain doubtful until a similar example to that figured by Herrich-Schäffer can be examined; the Venezuelan form there represented appears to have dentated secondaries, and the lines across the wings seem to be simply angulated,

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whereas in the Amazon form they are dentated; I am however inclined to believe that the figure is incorrect in the second character, from an examination of the Venezuelan *A. metaspilata*, in which the lines, though extremely indistinct, are unquestionably dentated; in this form also the margin is not perfectly entire, though less dentated than in Herrich-Schäffer's figure; however, if the Amazon form be distinct from the Venezuelan one, it may prove to be a variety of the following:—

42. *Anisodes globaria?*

*Anisodes globaria*, Guenée, Phal. i. p. 417, n. 682 (1857).

Rio Jamunda, 11th April, 1874.

Here again it is impossible to be certain of my identification. M. Guenée mentions "une série subterminale de points gris et de petits points terminaux à peine visibles," whereas Dr. Trail's example has the usual zigzag or dentated submarginal line instead of a series of dots; the coloration of the head also seems decidedly darker; still these differences in a variable genus may very likely be individual, so that I think it would be venturesome to describe the Amazon form as distinct; it is allied to "*Epione?*" *roseigera* of Walker.

43. *Anisodes nodigera*, n. s.

Bright ochraceous; wings crossed by four dentate-sinuate greyish brown stripes, and mottled with red-brown; a marginal series of black dots; primaries with a greyish brown rounded spot, enclosing two blackish elongated dots upon its inner half, near the outer margin upon the radial interspaces; a second but very indistinct smaller greyish spot towards the external angle; costal border dusky; secondaries with a metallic knot-like silver spot at the end of the cell; abdomen paler than the thorax; wings below pale creamy yellowish; primaries with the markings as above, but of a dull rose-colour; secondaries with markings on the costal and external areas also rose-coloured; no trace of the silver spot of the upper surface; expanse of wings, 1 inch 2 lines.

Pariti, Rio Purus, 5th October; Rio Jurua, 4° 40′ S.,

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40′ W., 29th October, 1874; Barreira branca, Rio ahi, 3rd February, 1875.

his species and the two following bear considerable emblance to the nearly allied genus *Synegia*.

44. *Anisodes nudaria.*

*nisodes nudaria*, Guenée, Phal. i. p. 417, n. 680 (1857).

Iouth of Rio Sapo, 14th December, 1874.

45. *Anisodes coxaria.*

*Anisodes coxaria*, Guenée, Phal. i. p. 416, n. 677 (1857).

Rio Negro, south bank, 16th June; Pupunhazinho, Jurua, 8th November; Sao Antonio, Rio Javary, 8th cember, 1874.

46. *Anisodes nebuligera*, n. s.

Seems allied to *A. urcearia*; bright stramineous, irro-ed with sienna-brown; wings crossed by three slightly hed and nearly equidistant dentate-sinuate grey lines; large and almost marginal grey spot on the radial erspaces of all the wings, and a marginal series of ck dots; primaries with brownish grey costal border; large submarginal grey spot bounded internally by dark brown dots; a small diffused greyish spot near margin towards external angle; two black dots at end of the cell, and one near the base of the sub-dian vein; secondaries with nearly the whole central rd up to the outer dentate-sinuate line occupied by a y nebula: two or three diffused greyish submarginal ts; a blackish diamond-shaped annulus at the end of cell; body creamy stramineous; under surface amy whitish, the inner lines of the upper surface olete; all the other markings violaceous; expanse of gs, 1 inch 3 lines.

South bank of Rio Napo, 16th June, 1874.

47. *Anisodes peculiaris*, n. s.

Pale stramineous; wings with the external third htly sordid (pale testaceous); an irregularly zigzag,

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slightly arched, pale rust-red line across the basal third, a black dot at the end of each discoidal cell, and a marginal series of minute black points; primaries with an irregularly bisinuated rust-red line just beyond the middle, partly bounded externally by a rather broad semicircular grey fascia, which runs from the inner margin to near the middle of the outer margin; from this fascia to the costa there is an indistinct greyish stripe bounded internally by a zigzag rust-red line; three blackish discal spots on the submedian and first and second median branches; secondaries crossed by a sinuous discal series of indistinct whitish dots bounded internally by rust-red Λ-shaped markings; front of head and antennæ grey-brown; under surface pale creamy stramineous; the primaries and the costal and external borders of the secondaries sparsely speckled with black; a black dot at the end of each cell, and a series, at the extremities of the veins, upon the fringe; a slender black marginal line and a well-defined rather broad irregular blackish submarginal band; expanse of wings, 1 inch 4 lines.

Rio Negro, 17th June, 1874.

The following alterations must be made in the *Ephyridæ*:—*Acidalia trigonata*, Walker, seems to be an *Ephyra* of the *E. albiocellaria* group, but *Ephyra? strigulataria* certainly does not belong to this genus, but to *Bargosa* of Walker; and *E. leonaria* is an *Anisodes*. *Anisodes imitaria*, Walker (= *A? obrimaria*), *A. pustularia*, *A. eumeleata*, and *A. hadassa* should all be referred to *Synegia*, although I am doubtful whether M. Guenée would not have done better by regarding the latter as a section of *Anisodes* than by placing it in the next family: *Anisodes? platycerata* is a *Drapetodes*.

ACIDALIIDÆ.

HYRIA, *Stephens*.

48. *Hyria pyraustaria?*

*Hyria pyraustaria*, Guenée, Phal. i. p. 429, n. 704 (1857).

Arapecu, Rio Trombetas, 4th March, 1874.

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CAMBOGIA, *Guenée.*

49. *Cambogia contractata.*

*Cambogia contractata*, Walker, Cat. Lep. Het. xxii. p. 671, n. 10 (1861).

*C. russearia* var., Walker (nec Hübner), *l. c.*, p. 669 (1861).

Amazons, 30th January, 1874.

50. *Cambogia procurata.*

*Cambogia ? procurata*, Walker, Cat. Lep. Het. xxii. p. 672, n. 12 (1861).

Pedroso, Rio Purus, 25th September, 1874.

The *Acidalia phorcaria* of Guenée seems allied to this species, and certainly looks quite out of place in *Acidalia*; *A. expressaria* of Walker is undoubtedly a *Cambogia*.

ACIDALIA, *Treitschke.*

This name, having been originally applied to a section of the Rhopalocerous genus *Argynnis*, will have to give way to one or other of Hübner's names; but since I have not at present time to devote to the determination of the types of that author's genera, I provisionally retain *Acidalia* in accordance with general usage.

51. *Acidalia eupitheciata.*

*Acidalia eupitheciata*, Guenée, Phal. i. p. 461, n. 767 (1857).

Rio Jutahi, near Rio Curuem, 29th January, 1875.

52. *Acidalia asopiata.*

*Acidalia asopiata*, Guenée, Phal. i. p. 472, n. 798 (1857).

Rio Jurua, 5th and 7th November, 1874.

53. *Acidalia stella*, n. s.

Bone-white; wings crossed by four parallel undulated equidistant grey lines, the outermost one indistinct, the first and third dotted with blackish; a marginal series



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of linear black dots; a small white elongated transverse spot at the end of each cell; antennæ silvery; under surface paler than above and sericeous; expanse of wings, 8 lines.

Rio Jurua, 7th November, 1874.

This species appears to be most nearly allied to *A. apparitaria*, although, judging by description alone, one might suppose it to come nearer to *A. figurinata*, Walker (nec Guenée) = *A. tacturata*, Walker, *ex parte*.

54. *Acidalia amazonata*.

*Acidalia amazonata*, Guenée, Phal. i. p. 503, n. 871 (1857).

Sao Antonio, Rio Javary, 6th December, 1874; Rio Jutahi, 29th and 31st January, 1875.

55. *Acidalia pulverea*, n. s.

Pearly white, sprinkled with brown atoms; wings with narrow irregular smoky-brown outer border, and a slender black marginal line; fringe purplish slate-colour at the base, but tipped with shining golden cupreous; a very irregular zigzag dusky externo-discal line, dotted with black upon the nervures; a black dot at the end of each discoidal cell, succeeded on the primaries and preceded on the secondaries by an indistinctly dentate-sinuate widely zigzag dusky line; primaries with the costal border dark slaty grey; palpi, frons, collar, and pectinations of antennæ golden testaceous; vertex and stem of antennæ snow-white; abdomen with a subterminal abbreviated transverse black bar; under surface sordid white; markings indistinct; fringe shot with lilacine pink; expanse of wings, 9 lines.

Uruçaca and Gaviao, Rio Jurua, 9th and 10th Nov., 1874.

This species appears to be most nearly allied to *A. expolitata* of Guenée, to judge from his description, but I have seen nothing like it in any collection.

56. *Acidalia terminata?*

*Acidalia terminata*, Guenée, Phal. i. p. 483, n. 824 (1857).

Prainha, 14th November, 1873.

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57. *Acidalia vinocinctata.*

*Acidalia vinocinctata*, Guenée, Phal. i. p. 483, n. 826; pl. 15, fig. 6 (1857).

Forest behind Arimanahy, 1st January, 1875.

58. *Acidalia juruana*, n. s.

Creamy white; the centre of the wings sparsely irro-ed with black scales; primaries crossed just beyond middle by two interrupted olivaceous lines, approxi-ted in the centre, but divergent at their extremities, outer line dotted with black, and immediately followed the median interspaces by an abbreviated litura and minute spot of the same colour; a barely visible very slender zigzag submarginal olivaceous line; ondaries crossed at basal third by a biundated vaceous line which does not reach the costa; a black t beyond it at the end of the cell; two closely approxi-ted parallel olivaceous sinuated discal lines, the inner dotted with black; a slightly irregular, very slender indistinct, submarginal line; margin dotted with ck towards the apex; front of head bronze-brown; ennæ slightly brownish; under surface white, the gs towards the base, and the body sordid; expanse of gs, 7 lines.

Rio Jurua, 7th November, 1874.

This little species appears to be allied to *A. purata* of enée.

59. *Acidalia calidata.*

*cidalia ? calidata*, Walker, Cat. Lep. Het. xxvii. p. 1599 (1862).

Braga, Rio Javary, 7th February; Rio Madeira, 26th y; Gaviao, Rio Jurua, 10th November, 1874; Boa-tura, Rio Jutahi, 24th January, 1875.

60. *Acidalia stictopteris*, n. s.

rimaries above lilacine-grey, washed with ferruginous, rated with minute black scales, and crossed beyond cell by three irregular angulated indistinct grey s; a small grey spot at the end of the cell; a dot in cell, and a submarginal series black; fringe laky vn; secondaries rather small, sericeous whity brown,

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becoming quite white towards the base; a marginal series of black dots; fringe clearer and more golden than the body of the wing; thorax whitish; abdomen greyish brown; wings below shining grey, with marginal or submarginal black dots as above; a black dot at the end of each cell, and a curved grey line beyond it; costa of primaries reddish ochraceous; body cream-coloured. Expanse of wings, 7 lines.

Barreira branca, Rio Jutahi, 3rd February, 1875. At light.

Allied to *Arrhostia elegantaria*, H.-Sch.

SOMATINA, *Guenée*.

61. *Somatina eburneata?*

*Acidalia eburneata*, Guenée, Phal. i. p. 474, n. 801 (1857).

Pupunha and Uruçaca, Rio Jurua, 1st and 9th Nov. 1874.

If I have rightly identified this little species it must be placed in *Somatina*, since it agrees in every structural character, excepting in its slightly less acuminate primaries, with *S. anthophilata*.

62. *Somatina fervens*, n. s.

Pattern of the preceding species, but more strongly marked; pale pinky brownish, the external area densely irrorated with ferruginous, especially between the discal and submarginal lines, where the red-brown scaling forms a defined but interrupted band; discal line dark brown, irregularly angulated; submarginal line widely sinuated, undulated, blackish, with a pale external border; slender black marginal line formed of confluent fusiform spots; primaries with ferruginous costal margin; an ill-formed oblique ferruginous stripe at basal fourth; crinkled dark red-brown central line, its outer sinuation filled in with the same colour; secondaries crossed just before basal third by an oblique bracket-shaped red-brown line; a dot of the same colour at the end of the cell; head black, with the vertex and base of antennæ cream-coloured, remainder of antennæ greyish brown; thorax and abdomen pale rosy brown; under surface sericeous whity brown, with the fringe of all the wings and the

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sta of the primaries yellowish; the latter wings with a ackish spot at the end of the cell, and a curved brevinted blackish discal line running downwards from e subcostal vein; secondaries with the external area intly tinted with yellowish; a brown dot at the end of e cell; legs above slightly tinted with yellow; expanse wings, 11 lines.

Rio Tapajos, 10th March; Rio Jurua, 7th and 10th vember, 1874; Rio Jutahi, 29th January, 1875.

Three specimens and a fragment of a fourth were tained at light; in coloration it differs entirely from *eburneata*, although very similar in pattern.

*Macaria ? turturaria* of Walker is referable to *Soma-a.*

After examining and comparing the genera *Acidalia* cluding several perfectly distinct genera), *Timandra*, *hodontia*, &c., with the *Macariidæ*, I have come to the nclusion that some of the species confounded together der the generic name *Macaria* could be advan-geously referred to the present family under the generic mes proposed for them by Hübner, but ignored by uenée.

The type of *Macaria* is necessarily *M. liturata* since at is the sole species given by *Curtis*, but *Geometra ernata*, Denis, and *Phalæna notata*, Linn., are certainly t congeneric with the insect, but agree in almost every spect with *Ochodontia sareptaria*. The following species e referable to *Parasemia* of Hübner, to which genus ese two well-known European forms belong:—*Macaria ulataria*, *inoptaria*, *discerptata*, *enotata*, *agnitaria* (type the genus), *clararia*, *approximaria*, *tectaria*, *emersaria*, *nghaisaria*, and *insistaria*; it is probable that many ner species unknown to me will fall into the same nus, and if *Ochodontia* be still retained as a group of *idaliidæ*, so close to *Timandra* that M. Guenée and ers would not separate it, I do not see how we can ce *Parasemia* in a distinct family; if we do, we must l to it *Timandra aventiaria* of India, which, although as the general aspect of a *Timandra*, is structurally *Parasemia.*

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### Calothysanis,* *Hübner.*

This genus may readily be distinguished from both *Acidalia* and *Timandra* by the well-defined angulation of the primaries.

63. *Calothysanis pulcherrima*, n. s.

Wings above sap-green, crossed at about the basal fourth by a slightly curved white stripe broadly bordered with slaty grey; a second white curved stripe edged with grey internally, and bounded externally by a broad grey discal band, which emits long dentate streaks along the nervures to the outer margin: primaries with the first two of these streaks (upon the last subcostal and third median branches) blackish; costa silvery white; secondaries with the first two discal dentate streaks abbreviated but blackish, the third well defined, blackish, and running to the angle of the wing at the extremity of the third median branch; all the wings with a slender black marginal line from the apex to the angle, and with white fringes; body white; under surface pearly white, with a grey indication of the discal band; expanse of wings, 11 lines.

Prainha.

Only one example of this very distinct and beautiful little species was obtained.

### Parasemia, *Hübner.*

64. *Parasemia percisaria.*

*Macaria percisaria*, Walker, Cat. Lep. Het. xxiii. p. 913, n. 80 (1861).

Santarem, Rio Jutahi, 4th February, 1875.

New to the collection of the British Museum; it is probably the same as *P. gambarina* of Cramer (pl. 371, B), of which moreover the *irrufata* of Guenée may be a variety; from Felder's figure (pl. cxxvii. 18) it differs only in that the slaty grey coloration of the primaries terminates obliquely at the external angle (as it does in Cramer's figure), and that there is no dusky band between the ordinary lines on the secondaries.

* As *amataria* (Hübner's first species) has been referred to *Timandra*, I shall regard *imitaria* as the type of his genus.

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65. *Parasemia gigantata?*

*Macaria gigantata*, Guenée, Phal. ii. p. 73, n. 1017 (1857).

Serpa, 13th February, 1875.

Very near to *Semiothisa gentilata* of Felder.

66. *Parasemia distans*, n. s.

*Phalæna notata* (part), Cramer (nec Clerck), Pap. Exot. iv. pl. 371, fig. G (1782).

Prainha, 14th January, 1873.

As neither of Cramer's figures represent Clerck's species they will both require to be renamed; it is possible, however, that the insect represented by fig. H may already have been described by Guenée, Walker, Snellen, or Felder, and therefore, for the present, I pass over it. Clerck's figure ('Icones,' pl. 6, fig. 11), represents a white species crossed by three pale yellow stripes, which commence in blackish spots along the costa of primaries; the group of dark spots bounding the third stripe on the primaries is not massed upon the lower radial interspace, and the ground colour beyond this stripe is equally white with the rest of the upper surface, whereas in *P. distans* the wings are pale stramineous, with the external area sordid or testaceous.

67. *Parasemia subitaria.*

*Macaria subitaria*, Walker, Cat. Lep. Het. xxiii. p. 910, n. 74 (1861).

Prainha, 14th November, 1873.

AZATA, *Walker.*

68. *Azata gambaria.*

*Semiothisa gambaria*, Hübner, Zutr. Exot. Schmett., figs. 159, 160 (1818).

Rio Jurua, 7th November, 1874.

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MACROGONIA, *Herrich-Schäffer*.

69. *Macrogonia igniaria*.

*Macrogonia igniaria*, Herrich-Schäffer, Auss. Schmett. pl. 57, fig. 315 (1850—69).

Prainha, 17th December, 1873.

Nobody who had examined this striking species could for a moment think that it was an *Acidalia*, as suggested by Walker.

ZANCLOPTERYX, *Herrich-Schäffer*.

70. *Zanclopteryx aculeataria*.

*Zanclopteryx aculeataria*, Herrich-Schäffer, Auss. Schmett. pl. 59, fig. 330 (1850—69).

*Gasmara uniferata*, Walker, Cat. Lep. Het. xxvi. p. 1634 (1862).

Barreiras de Ouary, Rio Purus, 2nd October, 1874.

BERBERODES, *Guenée*.

71. *Berberodes conchylata*.

*Berberodes conchylata*, Guenée, Phal. ii. p. 17, n. 917, pl. 12, fig. 9 (1857).

*Chrysocestis institata*, Walker (nec Stoll), Cat. Lep. Het. xxii. p. 621 (1861).

Prainha, Rio Jurua, 5th November, 1874; Rio Jutahi, 5th February, 1875.

BALLANTIOPHORA, n. g.

Allied to *Berberodes*, but with the outer margin of the secondaries less angular; the disco-cellulars of the primaries more transverse, so as to join the median vein just before the emission of the second and third branches; the male with a thickened fringed purse-like swelling at about the middle of the inner border of the primaries, and the anal angle of the secondaries not curved upwards like a shell, as in *Berberodes*, but flat. Type, *Berberodes gibbiferata*, Guenée.

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72. *Ballantiophora gibbiferata.*

*Berberodes gibbiferata*, Guenée, Phal. ii. p. 17, n. 918 (1857).

*Chrysocestis bisignata*, Walker, Cat. Lep. Het. xxii. p. 621, n. 3 (1861).

Prainha, 14th November, 1873.

73. *Ballantiophora lanaris*, n. s.

Chalky white; wings crossed by three subparallel ries of pale yellow spots, the first series not ex- nding into the secondaries, and only consisting of o widely separated spots; external border grey, with a rginal series of conspicuous black spots; fringe le pinky brown; primaries with the costal border amineous, streaked with shining leaden black; condaries with the anal half of the abdominal margin adly fringed with woolly hair; head clay-coloured; der surface sordid white; wings with brown external rder; expanse of wings, 10 lines.

Rio Taruma, Rio Negro, 31st July, 1874.

MICRONIIDÆ.

I am satisfied that the following genera ought not to be erred to this family, but as they have been placed here will be better not to disturb them until their true nities can be satisfactorily made out.

NEDUSIA, *Hübner.*

74. *Nedusia metachromata.*

*Erosia metachromata*, Walker, Cat. Lep. Het. xxiii. p. 835, n. 2 (1861).

Amazons. No exact locality or date given.

SCHIDAX, *Hübner.*

75. *Schidax squammaria.*

*Schidax squammaria*, Hübner, Zutr. Exot. Schmett., figs. 161, 162 (1818).

Serpa, 13th February, 1875.



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MENDA, *Walker*.

To this genus the so-called "*Molybdophora*" *concinnularia* of Herrich-Schäffer must be referred, as also the "*Nadagara*" *nigripalparia* of Walker. What Guenée associated *M. concinnaria* and the *concinnularia* of Herrich-Schäffer together for, I cannot at all comprehend; certainly not for any similarity either of form or coloration; and as for the *hyphinoë* of Cramer, I can second his remark, "Je ne suppose pas qu' *Hyphinoë*, Cram., 357 G, H, puisse se placer ici," inasmuch as that species, of which Dr. Trail took no less than eighteen specimens, is a *Deltoid* referable to Walker's genus *Gaala*, and nearly allied to his *Rethma*.

It is a singular fact that M. Guenée's remark did not deter Mr. Walker from placing the *Phalæna hyphinoë* of Cramer under *Molybdophora*, nor from regarding *Rethma* as a genus of *Geometrites*.

76. *Menda cinerea*, n. s.

Form of *M. nigripalparia*; silvery ash-grey, crossed in the centre by two darker grey stripes, the inner one nearly straight, the outer one undulated; a discal series of subconfluent white lunules; primaries with blackish costal margin; body immaculate; head dusky; under surface uniform silvery grey, without markings; expanse of wings, 1 inch 5 lines.

Rio Jurua, 2nd November, 1874.

MACARIIDÆ.

MACARIA, *Curtis*.

77. *Macaria infimata*.

*Macaria infimata*, Guenée, Phal. ii. p. 81, n. 1041 (1857).

Below Tabatinga, 28th November, 1874.

78. *Macaria peltigerata*.

*Macaria peltigerata*, Guenée, Phal. ii. p. 79, n. 1033 (1857).

Rio Jurua, in the forest, 7th and 8th November, 1874.

Apparently not a rare species.

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79. *Macaria cometifera*, n. s.

Allied to *M. pernicata*, Guenée (which we have recently obtained from Rio Janeiro), distinctly smaller, and different in pattern; wings white, mottled with greyish brown, the nervures and fringes pale stramineous; wings crossed by three greyish brown lines, the first two approximated, undulated, incurved at costal margin of primaries, the first obsolete upon the secondaries; third line slightly undulated and transverse on the primaries, dentate-sinuate and arched on the secondaries, bounding a greyish discal band, which is limited externally by a less distinct undulated submarginal line, a slender black marginal line, two grey lines on the fringe; primaries with two black discal dots, one above the other, followed by two fusiform silvery white spots; body greyish; under surface washed with yellow, excepting upon the external border; discal band rather reddish; expanse of wings, 11 lines.

Uraria Channel, 8th May, 1874.

EUTROPA, *Hübner.*

80. *Eutropa? columbaris*, n. s.

Flesh-coloured; wings crossed by three greyish brown lines, the innermost one slightly sinuous, wanting on the secondaries, the second, which is placed just beyond the middle, very irregularly sinuated; the third flecked here and there with black, parallel to the second, and limiting the external border, which is of a slightly paler greyish brown colour; vertex of head greyish; under surface much more pink in tint, the innermost line absent, the second line more strongly defined, and the third line merged in a very irregular grey submarginal band; expanse of wings, 1 inch 5 lines.

Serpa, 21st April, 1874.

This species seems to be allied to *E. distribuaria* of Hübner, although the banding of the wings is far more simple; as to whether the genus is rightly referred to the *Macariidæ*, I must leave to future investigation to decide.

Before leaving the *Macariidæ*, I may mention that the following species placed in *Macaria* are referable

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to the genus *Semiothisa* (regarding as type of that genus the *S. fasciata* of Fabricius) :—*Macaria eleonora*, Cramer = *S. fasciata*, *M. nora*, Walker, *M. neonora*, Walker, *M. xanthonora*, Walker, *M. myandaria*, Walker, and perhaps *M. elvirata* of Guenée, and *Azelina metagonaria* (which are probably conspecific).

*M. bisignata*, Walker (which has no character in common with Packard's *Semiothisa bisignata*), is apparently a *Molybdophora*, although the want of Hübner's *M. concinnaria* unfortunately prevents my comparing the neuration, and, consequently, I can only be guided by similarity of form. The *Semiothisa divergentata* of Snellen appears to me to be much more like some of the forms associated under *Acidalia*, although in some respects it is more like some of the species associated under *Tephrina*, such as *T. divisaria*, *deerraria*, &c.; to the latter group I shall provisionally refer it and a nearly-allied species, which I here describe:—

## FIDONIIDÆ.

### Tephrina, *Guenée*.

### 81. *Tephrina lucinda*, n. s.

Nearly allied to *T. divergentata** ; smaller; upper surface very pale stramineous, almost cream-colour; wings speckled with dark brown, and crossed in the central area by two subparallel slender dark brown lines, beyond which the ground colour is more densely speckled and yellower; a very slender black marginal line; primaries with a third very irregular brown line near the base, and a black spot on the second median interspace; under surface brighter in colour, yellower; an arched bisinuate brown line beyond the outer or discal line on all the wings; also two black spots beyond this line; otherwise as above; the outer margin angulated slightly at the third median branch; expanse of wings, 11—13 lines.

Serpa, 13th February, 1875.

* See Felder, Reise der Nov., Lep. v. pl. cxxviii. figs. 22, 22*a*.

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LARENTIIDÆ.

SCORDYLIA, *Guenée.*

82. *Scordylia? basaliaria.*

*Scordylia basaliaria*, Walker, Cat. Lep. Het. xxiv. p. 1280, n. 15 (1862).

Teffé, in the forest, 19th October, 1874.

Two or three other minute *Geometrites* were obtained, but in so worn and broken a condition as to be unrecognisable; they seem to be very small species of *Cambogia*, *Hyria*, and *Acidalia*.

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XX. *Notes on new or interesting species of* Papilionidæ *and* Pieridæ, *collected by* Mr. Buckley *in Eastern Ecuador.* By W. F. Kirby.

[Read July 6th, 1881.]

Some months ago Mr. Henley Grose Smith placed in my hands a portion of the fine collection of butterflies collected by Mr. Buckley in Ecuador. It was originally intended to publish a list of all the species obtained, but pressure of other work prevented me from completing it; and I now, by permission of Mr. Smith, lay before the Society the notes which I made on the more interesting *Papilionidæ* and *Pieridæ*. The types of the new species are in the collection of Mr. Smith. I am indebted to Mr. Buckley for notes on localities, &c.

*Papilio Euterpinus*, Salv. & Godm.

*P. Euterpinus*, Salv. & Godm., Ann. Nat. Hist. (4), ii. p. 150, n. 24 (1868); Hew., Exot. Butt. iv. *Pap.*, pl. x., fig. 31 (1869).

Mr. Buckley was too late for this species, and only met with worn females. They are brown, with the cell and a wide band between it and the inner margin ochreous-yellow. As far as I can judge from the condition of the specimens, it does not quite extend to the hind margin, nor to the anal vein; much less to the inner margin.

Inhabits moist places at a high elevation. Chiquinda.

*Papilio Lacydes*, Hew.

*P. Lacydes*, Hew., Equat. Lep. i. p. 1 (1869).

*P. Erithalion*, aberr. *Equestris*, Oberthür, Études Ent. iv. p. 88, pl. v., fig. 2 (1880).

Several specimens of this little-known species. The insect which I describe below is supposed to be the male.



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Black, with a large dull green spot on the inner margin, of a long narrow pear-shape, the thin end directed towards the base; hind wings with white incisions, and with three scarlet spots shot with violet, not close to the anal angle; the outermost is round, and the others larger, and oval. Under side black; base spotted with red, and a red belt near the extremity of the abdomen. Hind wings with five spots, the two outermost pale pink and slightly oval, the fifth of the same colour, but merely indicated; the two nearest the anal angle white, and smaller than the two outer ones.

Sarayacu and Chiquinda.

*Papilio Virginia*, n. s.

Allied to *P. Lacydes*, Hew.

Expands 3½ inches. Dark brown; fore wings with a broad white band crossing the end of the cell, the lower angle of which it touches, and then widening outwards towards the middle of the inner margin, which, however, it does not reach. Hind wings with white incisions. and a row of seven white transverse spots; spots four to six more oval and larger than the others, but spot five much the largest; spot seven at the anal angle, wide, and tinged below with rose-colour. Under side similar, but paler, and spotted with red at the base; the anal spot on the hind wings divided into two, the first red and white, and the second red.

Banks of the Copataza River, which flows into the Pastaza River.

*Papilio Charoba*, n. s.

Expands 3½ inches. Black; fore wings with a suffused yellowish white band running from the inner margin parallel with the hind margin for half the breadth of the wing. The upper portion is narrowed, and greenish. Hind wings with five oval scarlet spots running from the anal angle; inner margin narrowly edged with scarlet; incisions white. Under side paler, base spotted with red; band of the fore wings reduced to two white spots, and an indistinct suffusion beyond; hind wings with five small pale pink spots.

Allied to *P. Cyamon*, Gray, but the pale band of the fore wings is shorter, broader, and less sharply defined;

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ıd *P. Cyamon* has four spots on the hind wings above ıd six below, instead of five on both surfaces.

Pastazza River.

*Papilio Chinsiades*, Westw.

*P. Chinsiades*, Westw., Trans. Ent. Soc. Lond. 1872, p. 101, pl. v., figs. 4, 5.

Rather smaller than in the figure, and with an ldditional spot on the hind wings, making two rows three each.

Sarayacu, &c.

*Papilio Drucei*, Butl.

*P. Drucei*, Butl., Trans. Ent. Soc. Lond. 1874, p. 434, pl. vi., fig. 2.

The green band of the fore wings is broader than in e type. In one specimen it is marked with a white ot, which reappears on the under surface.

Woods and banks of streams, Canelos.

*Papilio Cutora*, Gray.

*P. Cutora*, Gray, Cat. Lep. Ins. B. M. p. 58, pl. x.*, fig. 6 (1832).

*P. Vertumnus*, var. *Cutora*, Bates, Trans. Ent. Soc. Lond. (2), vol. 5, p. 440 (1861).

The male differs from the type, but agrees with the ıriety mentioned by Bates, in the spots of the under rface of the hind wings being yellow instead of red. ıe red spot of the upper surface is smaller than in ray's figure; and the green spot of the fore wings also smaller and not marked with white.

Common everywhere.

*Papilio Xeniades*, Hew.

*P. Xeniades*, Hew., Trans. Ent. Soc. Lond. (3), vol. 5, p. 561 (1867); Exot. Butt. iv. *Pap.* pl. ix., fig. 26 (1868).

Varies considerably in size, and in the number of ots on the hind wings. There are sometimes only



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two, and sometimes three, four, five, or six. This insect is hardly distinct from *P. Gayi*, Luc.

River Topo.

*Papilio Isidorus*, Doubl.

*P. Isidorus*, Doubl., Ann. Nat. Hist., vol. xviii. p. 375 (1846); Gray, Cat. Lep. Ins. B. M. i. p. 63, pl. vii. fig. 4 (1852).

The red spots are a little smaller than in Gray's figure.

Common everywhere.

*Archonias Colla*, Doubl.

*Euterpe Colla*, Doubl., Ann. Nat. Hist. xix. p. 188 (1847).

*E. Philais*, Felder, is perhaps the same species.

St. Inez.

*Archonias Suadela*, Hopff.

*Euterpe Suadela*, Hopff., Stett. Ent. Zeit. 1874, p. 329; 1879, p. 55.

Stands in Mr. Hewitson's collection as *E. Pinava*, Doubl.

St. Inez.

*Archonias Chelidonis*, Hopff.

*Euterpe Chelidonis*, Hopff., Stett. Ent. Zeit. 1874, p. 330; 1879, p. 58.

Stands in Mr. Hewitson's collection as *E. Zara*, Boisd., which appears to be a MS. name.

St. Inez.

*Archonias Eurytele*, Hew.

*Euterpe Eurytele*, Hew., Exot. Butt. i. *Eut.* and *Lept.*, pl. i. fig. 1 (1852).

Much larger than the type.

Always found near rivers, on wet sand or shingle, Canelos, &c.

*Dismorphia Leonora*, Hew.

*Leptalis Leonora*, Hew., Equat. Lep. p. 7 (1869); Exot. Butt. iv. *Lep.*, pl. vi. figs. 39—41 (1870).

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A variety with the black border of the hind wings ceasing abruptly about the middle of the hind margin.

Found on a muddy path between St. Inez and the Topo.

*Dismorphia Hewitsonii*, n. s.

Expands 2 inches 4 lines—2 inches 8 lines.

Allied to *D. Rhetes*, Hew., which Mr. Hewitson described and figured from a Colombian specimen in Boisduval's collection, but which is represented in his own by the present species.

Fore wings black; a large irregular lilac band runs from the base, divided into three by the nervures; the first long and narrow, running along the lower side of the discoidal cell; the second forms an obtuse-angled triangle, starting with the first from the base, and ceasing at about one-third of the length of the last, which fills up nearly the whole space between the second and third median nervules, but is narrowed above beyond the middle, and ends in a point before quite reaching the hind margin; below it are two smaller long spots near the hind margin. On the costa is a white spot before the end of the cell, beyond and below which is a band of two white and two lilac increasing spots, only separated by the veins; beyond this is another row of five smaller white spots, beginning with two connected ones on the costa; the rest well separated. Hind wings bluish hyaline, with a black indented border; the cell filled up with rufous-brown, edged with blackish below; the wing beyond is whiter, and stained with rufous. Under surface tawny brown; fore wings bluish white below the middle of the cell, and the same colour curves round its extremity. A large bluish white spot on the costa before the end of the cell; the outer row of five spots is also present, and there are two more at the extremity of the wing; hind wings silvery white; costa fawn-colour; cell fawn-colour, edged on both sides with black, and the upper black stripe running to the subcostal nervure in a right angle at its extremity; border of the wings fawn-colour, edged below with blackish, which runs triangularly upwards towards the extremity of the cell; tip with three small white spots. Female similar; cell of the hind wings black, edged with lilac-white; under surface with the hind wing cell only

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edged with black above, and with a short fawn-coloured band instead of a black one running from its extremity to the costa.

Chiquinda.

*Dismorphia Medora*, Doubl.

*Leptalis Medora*, Doubl., Ann. Nat. Hist. xiv. p. 420 (1844); Doubl. & Hew., Gen. D. Lep. pl. v. fig. 4 (1847).

Appears to be a somewhat variable species.

Baños, at the foot of Mount Tungaragua.

*Dismorphia Hyposticta*, Feld.

*Leptalis Hyposticta*, Feld., Wien. Ent. Mon. v. p. 77, n. 20 (1861); Reise Nov. Lep. ii. p. 142, pl. xxii. f. 7, 8 (1865).

♂. Fore wings black, with an irregular yellow band divided into four spots by the nervures crossing the end of the cell, one on the costa, one within, and one beyond the cell, and the fourth below; three yellow dots nearer the tip, and a yellow stripe on the hind margin. Hind wings pale yellow, with a decreasing black border, indented on the inner side, and ceasing at the outer angle of the wing. Under side of fore wings greenish white; costa with a longitudinal rusty streak at base of costa, an irregular blotch of the same colour on the costa at the end of the cell; and the nervules on the hind margin suffused with rust-colour, and spotted with yellow between. Under side of hind wings as in the female.

Valley of Curarai.

*Dismorphia Arcadia*, Feld.

*Leptalis Arcadia*, Feld., Wien. Ent. Mon. vi. p. 410 (1862); Reise Nov. Lep. ii. p. 141, pl. xxii. figs. 1—3 (1865).

Several specimens, varying considerably among themselves, but none agreeing exactly with Felder's figures.

Mapoto, between Baños and St. Inez.

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*Dismorphia Ela*, Hew.

*Leptalis Ela*, Hew., Equat. Lep. p. 82 (1877).

The under side of the hind wings varies considerably; sometimes there is a reddish line within the black white-spotted border; sometimes a yellow one, joining the yellow stripe on the costa; and sometimes there is no pale stripe at all.

Canelos.

*Dismorphia Orise*, Boisd.

*Leptalis Orise*, Boisd., Sp. Gén. i. p. 415 (1836); Hew., Exot. Butt. ii. *Lep.*, pl. 2, f. 10, 11 (1857).

Several specimens in woods on mountain sides. Granadillas.

*Pieris Imperator*, n. s.

Expands 3½ inches. Allied to *P. Phaloe*, Godt.

White; fore wings with a black spot at the end of the cell, and the tip black, as far as the outer third of the costa, and to beyond the middle of the hind margin; the extremities of all the nervules black, and the neighbourhood of the lower ones speckled with dusky on the hind wings; under surface of fore wings with the costa ashy, and the apical spot ashy, and not extending along the hind margin; hind wings beneath pearly white; costa orange at the base; all the veins black, and with black lines running between them; a black band formed chiefly of dark scaling runs along the subcostal and first subcostal nervures from the base to the hind margin, and a broad lunule of similar character rests its upper and outer portion on the extremity of the discoidal cell.

The only species of this group of *Pieris* met with.

River banks, Copataza; also inhabits Bolivia.

*Pieris Smithii*, n. s.

Expands 1 inch 10 lines.

Sulphur-yellow, base dusted with black; costa black as far as the end of the cell, the colour extending over the upper half of the cell. Beyond this the costa is very narrowly edged with black till it meets the black border, which is deeply excavated opposite the cell, and

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grows very narrow towards the anal angle, at which it ceases. Hind wings with black dots at the ends of the nervules, above and below. Under side of fore wings yellowish; the tip, as well as the hind wings, pearly white; cell of the hind wings broad, terminating in two black angular marks.

Allied to *P. Eleone*, from which it differs in the form of the band.

Flying about the sulphur spring at Baños.

*Colias Dinora*, n. s.

Expands 1 inch 8 lines.

Curiously resembles *C. Hyale*, and also *C. Dimera*, var. *Semperi*, Reak; figured by Strecker, Lep. pl. iv. fig. 4.

Pale yellow; fore wings with a black spot at the end of the cell, and with a decreasing black border, indented on the inside, and marked with a row of four nearly continuous yellow spots, preceded by a yellow streak on the costa nearer the base. Hind wings with a narrow black border, not extending beyond the middle of the hind margin. All the fringes rosy, as well as the head, antennæ, and legs. Under surface: fore wings with the black spot centred with white, and with a row of indistinct reddish spots nearer the hind margin; hind wings with a similar row of spots, but more distinct, and with a silvery spot surrounded with reddish at the end of the cell; there is also a reddish basal streak running along the lower side of the discoidal cell for half its length.

Found just below Chimborazo.

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## XXI. *On the larva of* Nycteribia. By Baron R. Osten-Sacken.

[Read July 6th, 1881.]

Plate XVI.

hrough the kindness of Mr. Aloïs Humbert, of Geneva, came in possession lately of a statement concerning a rect observation on the oviposition of *Nycteribia*, and, ot being aware of the existence, in print, of a similar atement, I deem it worth while to communicate this ote. Our present knowledge on the subject of the velopment of *Nycteribia* is confined, as far as I know, Professor Westwood's observations, recorded in the rliest monograph of that genus (Trans. Zool. Soc. 35, p. 283). In order to disprove Latreille's supposi-on, that insects of this genus grow, like spiders or lice, rofessor Westwood extracted a *Nycteribia* in the pupa ate from the body of the mother insect, and thus owed that its development was similar to that of *ippobosca*. He also gave three figures of the puparium. he next and only other statement which I can find on is subject is that of Kolenati (Horæ Entom. Ross. ii. , 1862), who says:—"The freshly-laid pupæ of *ycteribia* are bluish, and assume afterwards the shape brown, barrel-shaped puparia; an opercule bursts en when the imago is ready to escape. I have myself und such puparia in the fur of *Vespertilios*; they were stened near the base of the hairs, and had the oper-les still attached." It would appear from Kolenati's rding that he merely saw the *dry* puparia, and that e *bluish colour* of the *freshly*-laid ones was recorded by mebody else; but I have failed to discover his source of formation. The same statement about the colour of e freshly-laid pupa is found verbatim in Kolenati's rlier work ('Die Parasiten der Chiropteren,' 1856, 33), but refers in this case to the *Pupipara* in general, t to *Nycteribia* in particular. Dufour's papers are oted (Ann. Sc. Nat., 1831 and 1845); but these contain thing about the pupa of *Nycteribia*.



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The new observation above referred to was made by Mr. Humbert during his travels in Ceylon in 1859, and he kindly permitted me to make use of the note and sketches which he took down on the spot about it, and of which I give the translation.

"*Nycteribia.* Taken on a young *Pteropus Leschenaultii*; Trincomali, May 30, 1859. Two of these insects, placed in a glass tube, laid puparia, which, at first, had the appearance of a transparent jelly; a few minutes later they began to assume a blackish hue (that of pale ink), especially along the borders; gradually the colour became darker, and on the following day these bodies were perfectly black, at least on the upper side (fig. *a*, *b*). The under side, fastened to the glass, remained more transparent. The shape of these puparia was nearly oval, the upper side convex (fig. *e*). This upper side shows, *about its middle*, two stigmata (fig. *d*); at one of the extremities of the body I thought I perceived another stigmatic opening; however, I am not able to affirm it positively, because the vision through the curvature of the glass was not quite distinct. The upper side was finely marked with undulating striæ (like the skin of certain *Arachnidæ*). On the under side (fig. *f*), through the transparent skin, rudiments of limbs were visible, subject all the time to a movement of contraction, resembling a vermicular motion. A light-coloured line in the middle was marked on both sides with some elongated dark spots."

In the foregoing, the object laid by the mother-fly was called by me pupa or puparium, according to the accepted usage, although, as Prof. Leuckhart ('Die Fortpflanzung und Entwickelung der Pupiparen,' Halle, 1858), has shown, it is in reality the mature larva, which only later becomes a pupa.

Mr. Humbert's data (sketches and description) about the larva of *Nycteribia* show the following differences from the figures of the larva of *Melophagus*, published by Prof. Leuckhart (*l. c.* iii. f. 2, 3):—1. The outline of the larva of *Nycteribia* is oval, the anterior end of which is largest; the outline of the larva of *Melophagus* is a regular ellipse. 2. The larva of *Nycteribia* does not show the nipple-shaped projection representing the head of the larva of *Melophagus*. 3. The larva of *Melophagus* has, *at the end* of the body, three pairs of stigmata, protected by a horny plate or armature; there is nothing

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like the stigmatical openings *in the middle* of the body, on its dorsal side, as described by Mr. Humbert in the larva of *Nycteribia*. 4. Finally, it would appear, both from the sketches and the descriptions, that the development of the limbs of the future insect was further advanced in the larva of *Nycteribia*, at the moment of its parturition, than in the larva of *Melophagus*, at the corresponding stage of its existence.

It would be unfair to push further the scrutiny of Mr. Humbert's sketch, jotted down on the spot without premeditation, and to which he attached so little importance that it remained more than twenty years in his portfolio. Still there is enough *primâ facie* evidence to show that the larvæ of *Nycteribia* differ very materially from those of other *Pupipara*, and would repay further study.

## Explanation of Plate XVI.

| | | |
|---|---|---|
| Figs. *a*, *b*. | Adult larva of *Nycteribia*. | Upper side. |
| Fig. *c*. | ,, ,, ,, | Natural size. |
| ,, *d*. | ,, ,, ,, | Upper side, showing stigmata. |
| ,, *e*. | ,, ,, ,, | Transverse section. |
| ,, *f*. | ,, ,, ,, | Under side. |



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XII. *Notæ Dipterologicæ. No. 5.—Descriptions of new species of Exotic* Tipulidæ, *with an annotated summary of species belonging to the same family, previously described.* By J. O. Westwood, M.A., F.L.S., &c.

[Read November 3rd, 1880.]

On previous occasions I have read before this Society descriptions of various new species of dipterous insects belonging to the family *Tipulidæ*, and have also published descriptions of others in various works, some of which are not easily accessible to the student. Having been applied to for copies of these latter descriptions, which I have not been able to procure, I have thought it desirable to bring together all the exotic species of this family which I have hitherto published, republishing the descriptions with notes upon such as have been subsequently commented upon by dipterologists. Of the species, however, published in our 'Transactions,' I have only thought it necessary to give the proper bibliographical references.

The following is a list of the species described or referred to in the following pages:—

Longoma fragillima.
Apanoptera plenipennis.
Gmatomera Amazonica.
Riocera lunata.
Synoplistia vilis.
" cyanea.
" bella.
" annulata.
" punctipennis.
" Wakefieldii.
Limnobiorhynchus Brasiliensis, female.
Branomyia Brasiliensis, male.
" Canadensis.
Athenia fasciata.
Megistocera dimidiata.
Caloptera Nepalensis.
Cerozodia interrupta.
Ozodicera gracilis.
" longipedalis.
Ptilogyna ramicornis.
Bittacomorpha clavipes.
Semnotes imperatoria.
" ducalis.
Tipula Brobdignagia.
" Mikado.
Limnobia Satsuma.
Libnotes Thwaitesiana.
Platyura (Platyroptilon) Miersii.
Culex alternans.



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MONGOMA, n. g.

Corpus elongatum gracillimum, abdomine filiformi. Caput parvum collo tenui, thoraci affixum. Palpi parvi capite breviores. Antennæ gracillimæ 16-articulatæ setis instructæ, articulo 1mo ovali crassiori, 2ndo brevissimo; 3tio, 4to, et 5to longitudine 1mi fere æqualibus et sequentibus crassioribus, 6to et reliquis pergracilibus et fere æqualibus. Thorax parvus ovalis antice compressus. Alæ elongatæ, angustæ, vena 2nda paullo ante medium venæ 1mæ emissa, et prope apicem ejus venula obliqua connexa; pone hanc venulam furcata, parte superiori furcæ obliqua et costam inter apicem venæ 1mæ et apicem alæ attingente; parte inferiori furcæ ad apicem alæ extensa; cellula discoidali extus venas 4 emittenti duabus intermediis brevioribus et subæque longis; basi cellulæ cum vena recurrenti continua; vena 5ta apice obliqua et apicem venæ 6tæ conjuncta in marginem posticum alæ. Pedes longissimi gracillimi; femoribus anticis supra spinulis duabus, extus directis, haud longe pone caput armatis; tibiis apice ecalcaratis. Tarsi unguibus elongatis acutis parum curvatis et prope basin paullo dilatatis; empodium carentibus.

*Mongoma fragillima.* (Pl. XVII., fig. 1).

Piceo-nigra, thorace dilutiori; alis parum infuscatis pseudostigmate obscuriore; pedibus fuscis, geniculis, tibiarum apice, tarsisque integris albis. Long. corp. 4½ lin. Expans. alar. 8½ lin. Long. ped. singul. 19 lin.

*Hab.* Mongoma Lobah, Africa tropicali. In Mus. Hopeiano Oxoniæ (*D. Hornimanno communicata*).

I am indebted to the Baron Osten-Sacken for the following notes on the relations of this singular little species:—

"The systematic position of this species is very puzzling, and I regret that I did not give it more attention when you showed it to me. It is important to know whether it has spurs at the tip of the tibiæ and a distinct empodium between the claws. If there are no spurs, and the empodium is present, the species may belong in the vicinity of my genus *Empeda* (Monogr. N. Am. Dipt., vol. iv. p. 193). An important difference, however, and a very striking character of your species,

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consists in the contact of the second submarginal cell with the discal, the consequence of which is that the small or anterior cross vein is wanting. A similar structure exists in the genus *Paratropesa*, Schiner (Novara, p. 44, pl. ii., fig. 2), and in a few other rare instances in the family *Tipulidæ*. But your genus is certainly not *Paratropesa*, because in that genus the first longitudinal vein is remarkably short, and does not reach much beyond the proximal end of the discal cell. You would be justified, therefore, in describing it as a new genus."

### Dapanoptera, *Osten-Sacken MS.*

This genus has been proposed for several beautiful species of gnats from New Guinea and Mysol, described (without proper notice of their precise structural peculiarities) by the late Mr. F. Walker under the names of *Limnobia latifascia* (Proc. Linn. Soc. viii. p. 104); *L. auroratra** (Ibid. viii. p. 202); *L. perdecora* (Ibid. v. p. 230); and *L. plenipennis* (Ibid. viii. p. 103, New Guinea).

These species agree in the remarkable characters of having the extremity of the first longitudinal vein evanescent before reaching either the costa or the extremity of the wing, which is marked shortly before the apex, in some of the species at least, by a white opaque transverse patch; and it is at the proximate edge of this patch that the first longitudinal vein suddenly ends.

I am indebted to the Baron Osten-Sacken for the following notes on this insect:—

"In the paper which I am preparing on Exotic *Tipulidæ*, I have established a new genus on *Limnobia plenipennis*, Walk., from New Guinea, and three others of Walker (all from New Guinea and Mysol). The characters of the new genus are—the evanescence of the tip of the first longitudinal vein, together with the cross vein adjoining it; the presence of a cross vein in the first posterior cell, together with the variegated colouring of the wings. This genus is closely related to *Limnobia* (*sensu stricto*), and will be called *Dapanoptera* (from dapane = expense, luxury, profusion)."

* Altered to *auroatra* in Proc. Linn. Soc. ix. p. 7, the name *auroratra* being evidently a typographical lapsus.

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*Dapanoptera plenipennis.* (Pl. XVII., fig. 2).

Walker, *l. c. supra* (*Limnobia plenipennis.*)

The fore wing of this very remarkable species is represented from a specimen from New Guinea, which I purchased and which is now in the Hopeian Collection. It has unfortunately the antennæ broken; the thorax is anteriorly very gibbose; the head small and affixed very low; the tibiæ have a very short slender spine at the extremity; the tarsi are destitute of an empodium; the extremity of the body is furnished with two rounded lobes and two recurved acute bifid horny spines.

The singularly irregular posterior margin of the wing is unique among dipterous insects, and it is strange that Mr. Walker should not have recorded it. His description of *D. plenipennis* is as follows:—

*Male.* Chestnut-colour, shining. Head, palpi, and antennæ, black. Thorax attenuated in front; pectus testaceous in front. Abdomen short, dull ochraceous, black towards the tip, very little longer than the thorax. Legs brown, long, slender; coxæ and femora testaceous, the latter with brown tips. Wings cinereous; basal and subapical parts pale luteous; three irregular blackish stripes; first stripe costal terminated by a white transversely-elongated blackish-bordered spot; second including two elongated white spots and two white points, beyond which there are two white blackish-bordered dots; third paler and diffuse, including one elongated white spot; a discal areolet, radial vein not forked; first externo-medial vein not forked; no second externo-medial vein; third externo-medial vein forked; one veinlet between the third externo-medial vein and the subanal vein, nearer than the discal areolet to the base of the wing; halteres testaceous, with white knobs. Length of the body 5 lines; of the wings 14 lines.

SIGMATOMERA.

Osten-Sacken, Monogr. of N. Amer. Dipt., vol. iv. p. 137.

*Sigmatomera Amazonica*, n. s. (Pl. XVII., fig. 3).

Capite obscure fulvo, oculis magnis fere in medio faciei conjunctis; palpis brevibus lutescentibus; antennis nigris 15-articulatis, thorace plus duplo longi-

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ibus, setosis, articulis 3tio ad apicalem nodosis, nodo icem singuli articuli occupante, articulo sequenti in rsum lobi oblique insidente; articulis apicalibus sen- n gracilioribus; thorace nigro, halteribus flavis; ab- mine maris elongato depresso setoso fulvo, apice fusco; dibus longis gracilibus, femoribus fulvis apice obscuri- ibus, tibiis apice inermibus, tarsisque pallide fuscis; alis llide flavis, macula subbasali, fascia paullo pone medium æ, apiceque fuscis; cellulis duabus discum alæ occupan- ous æque longis; cellula nulla vera discoidali. Long. rp. 5 lin.; abdom. 3¼ lin. Expans. alar. 11 lin. Long. tenn. 4 lin.

*Hab.* Amazonia (*Bates*). In Mus. Hopeiano Oxoniæ.

The Baron Osten-Sacken has favoured me with the llowing notes on this insect:—

"I would place this species, at least provisionally, in the nus *Sigmatomera*, the typical species of which *S. flavi- nnis*, from Mexico, is published in the Additions and rrections to Mon. N. Am. Dipt. vol. iv., which are placed the end of vol. iii., because it appeared much later than l. iv. Your species has nearly the same venation as *gmatomera*, only the discal cell is open, which is a aracter of secondary importance only. *Sigmatomera* s the same remarkably nodose antennæ, although the tails of their structure are somewhat different. It has e same large, convex, approximate eyes, and, more portant than all, no spurs at the tip of the tibiæ. is last character I hold to be a decisive proof of the ationship, as well as of the systematic position of both ecies. They belong to that small group of *Tipulidæ vipalpi* that have the characters and habitus of the tion *Limnophilina*, but no spurs at the tip of the iæ, which gives them an artificial position in the tion *Eriopterina*. That your antennæ count fifteen nts, and not sixteen, the normal number, I look on as unimportant, as the last joint is often a mere liment."

ERIOCERA, *Macquart.*

*Eriocera lunata*, n. s. (Pl. XVIII., fig. 4.)

Affinis *E. selene*, Osten-Sacken, Enum. Dipt. Malayan Archipel. p. 18.

Badia, thorace glabro nitido, abdomine luteo-brunneo, ennis longissimis fuscescentibus articulis duobus

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basalibus luteis, ultimo (5to) præcedenti sextuplo longiori; capite tuberculo magno antico supra basin antennarum prominente; pedibus lutescentibus; alis fuscis lunula parva inter basin et medium, macula magna lunata media (ad costam pone medium attenuata et interrupta) maculaque altera subtrigona infra apicem, albis; ultima striga oblique fusca in duas partes divisa. Long. corp. unc. $\frac{1}{3}$=4 lin. Expans. alar. 11 lin. Long. articuli 3tii antennarum 2 lin.; 4ti 2$\frac{1}{2}$ lin.; 5ti 12 lin.

*Hab.* Sarawak, Borneo (*Wallace*). In Mus. Hopeiano Oxoniæ (*olim nostr.*).

The length and slenderness of the antennæ, with the spotted wings, render this insect extraordinary. The large rounded tubercle on the front part of the head appears to be natural. The antennæ appear to be only 5-jointed; the third joint is thrice the length of the head and first joint of the antennæ, the terminal joint being six times longer than the preceding joint; they are extremely slender and very finely setose; the palpi are not longer than the head; the tibiæ are armed at the tip with a distinct acute spur; and the abdomen is terminated by two horny elongated recurved appendages, each with a short curved very acute spine. The second longitudinal vein emits close to its base a short spur into the disc of the wing, and the discal cell is nearly square, and emits three equal veinlets at its outer margin.

I am indebted to the Baron Osten-Sacken for the following notes on this genus:—

"This genus is closely allied to *Anisomera*, and, like the latter, easily distinguished from all the *Tipulidæ* by the abnormal number of antennal joints: usually six in the male,* and about ten in the female. *Erioceræ* are numerously represented in the tropical regions of the Old, and of the New, World. In North America they are not rare in the temperate, and even in the colder region, and reach as far north as Canada. In Europe they are much more rare, and are represented by two species only (genus *Penthoptera*, Schiner), which occur, as far as I know, only in the south and south-east

* "No wonder that you do not perceive any articulations but two in the long extremity of the antenna of this species. This species should have six joints in the antenna; you make out five, but it may be that the last joint is rudimental."—Osten-Sacken, *in. litt.*, July 24th, 1880.

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hat part of the world. A small number of *Erioceræ* fer from the others in the enormous elongation of the ennæ of the male sex, in comparison to those of the ale. The geographical distribution of these latter cies is singular; among the large number of *Erioceræ* ich I have seen, I have met with only four such cies from North America, three from the Indian chipelago, and two fossil ones included in Prussian ber. The numerous *Erioceræ* from Mexico, South erica, India, and China, which I have seen, all have rt antennæ in both sexes. The species figured by is one of the three species of that group which occur the Indian Archipelago; the other two are *E. verticalis*, ed., from Java, and *E. atra*, Doleschall, from Amboina. e latter I have never seen, but have little doubt that elongs here, although described as a *Megistocera*."

To the preceding Malayan species must be added *iocera morosa* (Celebes) and *E. selene* (Sumatra), ently described by the Baron Osten-Sacken, from the noa Museum. Enumeration Dipt. Malay. Archipel., 18.

GYNOPLISTIA.

Westw., in Lond. & Edinb. Phil. Mag., April, 1835, p. 280.

*Gynoplistes* [nec *Anoplistes*], Westw., Zool. Journ., vol. v. (No. 20, September, 1835), p. 447.

*Ctenophoræ* affinis. Rostrum (vel clypeus) capite vius. Antennæ capite multo longiores, in utroque u supra pectinatæ, mas. 18- fœm. 17-articulatæ. domen fœm. depressum latum, apice acuminato, ductu exserto acuto. Alarum venæ ut in *Ctenophora eolata* dispositæ.

Sectio 1ma. Antennæ maris graciles, singulo articum 3—17 ramum longum gracilem superne emittente.

*Gynoplistia vilis.* (Pl. XVIII., fig. 6, antenna).

*Ctenophora vilis*, Walker, Ent. Mag., ii. 469; Westw., l. Mag. ut supra (*G. vilis*).

*Gynoplistes nervosa*, Westw., Zool. Journ. v. 5, No. 20, 147; plate xxii. figs. 10, 11.

♂. Fusco-nigra; abdomine subrufescente margine tico segmentorum pallido, apice (ano) obscuriore;



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alis pallide fuscis, venis, macula parva antica centrali alteraque pone medium obliqua nigris; pedibus fuscis, femoribus basi pallidis. Long. corp. mas. 6 lin. Expans. alar. 11 lin.

*Hab.* In Australasia. In Mus. nostr. (nunc in Mus. Hopeiano Oxoniæ).

*Gynoplistia cyanea.*

Westw., in Lond. & Edinb. Phil. Mag., April, 1835, p. 280.

Nigra, abdomine chalybeo purpureoque nitenti; femoribus tibiisque ad basin minus obscuris; alis obscure venosis costa maculisque duabus subcostalibus fuscis; fœm. antennis mutilatis. Long. corp. 6 lin.

*Hab.* In Nova Hollandia. In Mus. Hopeiano Oxoniæ (*olim nostr.*).

*Obs.* A Tipulideis omnibus colore metallico discrepat.

[*Limnophila metallica*, Schiner, Novara Dipt. p. 41, from Sydney, appears to be very closely allied to this species, but the description given by that author does not mention the two subcostal brown spots of the wings.]

GYNOPLISTIA.

Sectio 2da. Corpus minus gracile. Antennæ maris paullo crassiores, singulo articulorum 3—14 ramum supra emittente; articulo 15mo supra acute producto, reliquis simplicibus. Antennæ fœm. articulis 3—11 ramum breviorem emittentibus, articulo 12mo sequentibus crassiori, articulo 17mo. 16mo longiore, ovali.

*Gynoplistia bella.*

*Ctenophora bella*, Walker, Ent. Mag., ii. 470; Westw., Lond. & Edinb. Phil. Mag., April, 1835, p. 280 (*G. bella*).

*G. variegata*, Westw., Zool. Journ. vol. v. No. 20, p. 448; plate xxii., figs. 12, 13.

Nigra; abdomine (nisi apice), alarum femorum tibiarumque basi fulvis; alis pallidis apice fasciisque tribus transversis nigris marginem posticum haud attingentibus, antice et in medio alæ lineis duabus nigris longitudinalibus, una costali, altera centrali conjunctis.

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Long. corp. maris 4½ lin.; fœm. (oviductu incluso) 5½ lin. Expans. alar. maris 7 lin., fœm. 11 lin.

*Hab.* In Australasia. In Mus. nostr. (nunc in Mus. Hopeiano Oxoniæ).

*Gynoplistia annulata.* (Pl. XVIII., fig. 7, antenna).

Westw., in Lond. & Edinb. Phil. Mag., April, 1835, p. 280.

♀. Nigra thorace coxisque læte fulvis; alis fuscis; abdomine sericeo subaurea obtecto; tibiis annulo centrali albo tarsisque basi fulvescentibus; antennis fœm. 17-articulatis, articulis 3—9 ramum brevem obtusum emittentibus, 10mo interne acute producto, reliquis simplicibus [oviductu fœm. longo acutissimo.] Long. corp. 5 lin. Expans. alar. 9½ lin.

*Hab.* In America Septentrionali. In Mus. Hopeiano Oxoniæ.

The Baron Osten-Sacken (in Loew's Mon. Dipt. North Amer., part i., April, 1862), observes, with reference to *Gynoplistia annulata*, that as "it is hardly probable that an Australian genus should also be represented on the continent of North America, it is to be presumed either that the genus is different or that the statement is based upon an error of locality." He further adds (*in litt.*, 18th March, 1881), that "the white rings on the tibiæ of *Gynoplistia annulata* are a character which belongs to all the *Ctenophoræ* of South-Eastern Asia with which I am acquainted."

The label attached to the type specimen in the Oxford Museum is in the handwriting of Mr. Hope, and is clearly written N. A.

*Gynoplistia punctipennis.*

Westw., in Ann. Soc. Ent. France, 1835, vol. iv. p. 682.

Capite et thorace cinereis; hujus dorso fusco, augulis humeralibus utrinque puncto nigricanti; abdomine fœm. obscure fusco, elongato, stylo rufescenti; alis limpidis, costa tenui, maculisque nonnullis parvis (ad conjunctionem venarum transversarum) alteraque stigmaticali majori fuscis; pedibus longioribus subtestaceis; femoribus tibiisque ad apicem fuscis, tarsorum articulis 2—4 albidis; antennis fœm. fuscis, basi pallidioribus, 16 ?-

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articulatis, articulis 3—8 interne acute productis vix ramosis. Long. corp. 7 lin. Expans. alar. 12 lin.

*Hab.* Nova Hollandia. In Mus. Hopeiano Oxoniæ (*olim nostr.*)

[*G. Cloniophora*, Schiner, Novara, Dipt., p. 40.]

*Gynoplistia Wakefieldii.* (Pl. XVIII., fig. 5, and details).

Elongata gracilis, cinerascens, abdominis apice subcastaneo, capite parvo, antennis mediocribus, nigris, maris 16-articulatis, articulo 3tio subtus dente brevi armato, 4to ad 13um singulo infra ramo gracili (ramis intermediis longioribus), instructis; tribus ultimis inermibus; fœminæ brevioribus etiam 16-articulatis, articulis 4—11 serratis. Rostrum breve, palpis rostro parum longioribus crassis setosis; thorace antice utrinque macula parva obscura, dorsoque vittis 4 nigricantibus, mesonoto immaculato; abdomine elongato, maris apice clavato; alis limpidis fusco-guttatis, gutta majori paullo ante medium et versus costam alæ, fasciaque abbreviata obliqua inter medium et apicem alæ; guttisque 4—6 in area pobrachiali longitudinaliter dispositis; pedibus gracilibus longitudine mediocribus; rufescenti plus minusve tinctis; femoribus ante apicem annulo pallido notatis; abdomine fœminæ elongato, oviductu longissimo acutissimo. Long. corp. maris $5\frac{1}{3}$ lin., fœm. $7\frac{1}{2}$ lin. Expans. alar. maris 9 lin., fœm. 10 lin.

*Hab.* In Nova Zealandia (*D. Wakefield*). In Mus. Hopeiano Oxoniæ, ♂ et ♀.

This insect is closely allied to *Gynoplistia punctipennis*, Westw., from New Holland, but is at once distinguished by the row of small dark dots arranged in a longitudinal series in the pobrachial cell of the wing, preceded by a dark patch at the origin of the præ- and pobrachial cells. From *G. subfasciata*, White MS., Walk., Cat. Dipt., p. 74, which, like *G. Wakefieldii*, inhabits New Zealand, it is distinguished by wanting the "two brown bands, which are distinct on the fore border, but pale, interrupted, and almost dentate towards the hind border."

This last species has been formed by Schiner into the genus *Cloniophora* (Novara Dipt., p. 40), founded upon a very broken specimen of the female. Walker gives no description of the antennæ, and Schiner describes that

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of the female as 18-jointed, the 3rd to the 13th joints having a single row of branches on the inner side, and the ovipositor unusually long and robust.

The Baron Osten-Sacken, who has carefully examined the type of *G. subfasciata* in the British Museum, assures me of its distinction from *G. Wakefieldii*.

### Limnobiorhynchus.

Westw., Ann. Soc. Ent. France, vol. iv. 1835, p. 683; Macquart, Dipt. Exot. i. part 2, p. 177.

[*Geranomyia*, Osten-Sacken, Cat. Western Dipt. p. 196.]

*Limnobiæ* affinis. Corpus elongatum, gracile. Caput parvum oculis magnis; proboscide gracili, cylindrica, porrecta, fere longitudine corporis; palpis haud conspicuis; antennæ breves, graciles, ad basin proboscidis insertæ, thorace multo breviores, maris 14-articulatæ, articulis 2 basalibus majoribus, reliquis æqualibus oblongo-ovatis; fœm. 12 vel 13-articulatæ brevissimæ, (articulis 2 vel 3 basalibus incrassatis, reliquis 10 sensim ad apicem attenuatis) articulis 2 terminalibus setis 6 longissimis, penicillum efformantibus, instructis. Prothorax in collum gracile productus. Alæ iridescentes, haud pilosæ, venis in alis masculinis fere ut in *Limnobia xanthoptera*, Meig. (Schilling Beitr. Dipt. t. 2, fig. 1), dispositis; in fœminis cellulis marginalibus cum submarginali omnino coalitis (vena longitudinali illas in mare dividente omnino obliterata) in mare etiam nubila stigmaticalis exstat, locum venæ transversæ rudimentalis indicante.

*Obs.* Ex omnibus Tipulideis adhuc cognitis differt proboscide longissima, inde affinitatem cum Culicideis possidere videtur.

As the species upon which I proposed this genus have afforded much discussion among dipterologists, I have thought it advisable to reproduce them verbatim below. These insects were three in number; two of them were from Bahia, in Brazil, communicated to me by the late J. Aspinall Turner, M.P.; they were a male and a female, corresponding in size, colour, and general appearance, pinned with the same small short kind of pin, and both having a very long porrected proboscis. Under these circumstances I did not hesitate to regard them as the opposite

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sexes of one and the same species (*L. brasiliensis*), although they differed in the structure of the antennæ, and slightly also in the veining of the wings, the male having an additional longitudinal vein running to the apex of the wings.

The third specimen was an unique insect from Canada, which I obtained from the collection of the late A. H. Haworth, and which agreed with the male from Bahia in the antennæ and wings (*L. canadensis*).

Previous, however, to the publicatiou of my memoir containing the description of *Limnobiorhynchus* in the French Annalles for 1835, Mr. A. H. Haliday had published the characters of a British genus with a long proboscis in the first volume of the 'Entomological Magazine,' January, 1833, under the name of *Geranomyia unicolor*, of which a figure and detailed description were published by Mr. Curtis in his 'British Entomology,' pl. 573, on November 1st, 1835.* This insect, having 14-jointed antennæ, is congeneric with the males of *Limnobiorhynchus brasiliensis* and *canadensis*, leaving the generic name to be restricted to the female of *L. brasiliensis*.

*Limnobiorhynchus brasiliensis*. (Pl. XIX., figs. 10, 11).

Westw., Ann. Soc. Ent. France, 1835, p. 683.

Pallide luteo-fuscescens; thorace fusco trivittato, post-scutello cinerascenti; oculis, antennis, et proboscide nigris; segmentis abdominalibus ad apicem in mare fuscis; pedibus fuscis; tibiarum apice nigro; alis iridescentibus, venis costalibus fulvescentibus. Long. corp. (proboscide excepta) mas 3 lin., fœm. 5½ lin. Expans. alar. 6½—7 lin.

*Hab.* Apud Bahiam Brasileæ. In Mus. Hopeiano Oxoniæ (*olim nostr.*).

* The following are the chief characters of *Geranomyia* given by Mr. Curtis:— Antennæ alike in both sexes, 14-jointed. Trophi elongated and porrected, forming a proboscis considerably longer than the antennæ. Labrum long and linear, slightly hairy at the apex. Tongue very long and linear, pointed, and a little dilated below the apex, which is hairy. Lip very long, divided from the base, forming two pilose branches, terminated by oblique elliptical lobes. Palpi clothed with short hairs, short, biarticulate? [The veins of the wings are arranged as in *L. brasiliensis*, male.]

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*Limnobiorhynchus canadensis.*

Westw., Ann. Soc. Ent. France, 1835, p. 684.

Præcedenti valde affinis. Differt thorace, proboscide, biarum apice halteribusque concoloribus, femorum pice infuscato, venis costalibus fuscescentibus. Long. rp. mas. 3¼ lin. Expans. alar. 7 lin.

*Hab.* In Canada. In Mus. Hopeiano Oxoniæ (*olim str.*).

Another species, congeneric with *Geranomyia unicolor*, as described by Macquart in the 'Histoire naturelle des es Canaries' of Webb and Berthelot, and in his Dipteres exotiques,' vol. i. pl. 7, fig. 1, under the name *Aporosa maculipennis*, and another species, *A. fuscana*, om the Isle of Bourbon.

Of this genus six species are contained in the Berlin useum, and have been described by Dr. Loew in the Linnæa Entomologica,' vol. v. p. 315 *et seq.* (1851), nder the names of *Aporosa insignis* (Brazil), *A. tristis* Brazil), *A. rufescens* (Porto Rico), *A. tibialis* (Brazil), *virescens* (St. Thomas), and *A. valida* (Chili).

Dr. Loew (Monogr. Dipt. N. Amer. i. p. 10) gives *mnobiorhynchus* as synonymous with *Toxorhina*, Loew ernstein und Bernstein-fauna. Schul prog, Berlin, 1850, 37, and Linn. Ent. v. p. 400, Berl., 1851, pl. ii. figs. —23), founded upon several species found in amber, d one living species from Porto Rico.

In the Proc. Acad. Nat. Sci., Philad., 1859, p. 221, the aron Osten-Sacken has discussed the question, and rived at the opinion of the identity of *Limnorhynchus* and *Toxorhina*, establishing the genus *Pephantomyia* for my *L. canadensis*, of which he had tained great numbers of both sexes from Trenton lls.

In the Proceedings of the Entomological Society of iladelphia, vol. iv. p. 229, the same author has again iewed the arguments in favour of the identity of the genera, and has described two new species of *Toxona*, in addition to *T. fragilis*, Loew, named *T. magna*, le and female, from New Jersey, and *T. muliebris*, le, from Massachusetts. As the venation of the gs in the two sexes of *T. magna* is identical, he reover considers that my statement of the difference

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in the venation of the wings in the sexes of *L. brasiliensis* is erroneous; that no such difference in the venation of the wings of the two sexes of the same species can exist, and consequently that the genus *Limnobiorhynchus* "has no existence at all." He consequently refers my male, *L. brasiliensis*, to the genus *Elephantomyia*, to which he assumes *L. canadensis* to belong, and my female to *Toxorhina*. Thus he adds:—"The confusion which for such a long time was connected with the existence of the genera *Toxorhina* and *Limnobiorhynchus* seems to have reached, or at least to be very near, its solution! This confusion was principally due to the very striking coincidence that both Westwood and Loew possessed only males of a genus with a submarginal cell, and only females of another genus without a submarginal cell. Both of these authors were so much struck by the extraordinary prolongation of the proboscis in both genera that they united them into one, with this difference, however, that Westwood noticed the difference in the neuration, and described it as sexual; Loew, on the contrary, entirely overlooked this difference."

In the Baron Osten-Sacken's 'Western Diptera,' published in the Bulletin of the U. S. Geol. and Geogr. Survey, vol. iii. No. 2, p. 196, he has sunk his genus *Elephantomyia*, and recorded my *L. canadensis* in the genus *Geranomyia* of Haliday.

The synonymy of these genera will thus stand:—

GERANOMYIA.

*Geranomyia*, Haliday (1833), Curtis (1835).
*Limnobiorhynchus*, Westw. (males only), 1835.
*Aporosa*, Macquart, Loew.
*Elephantomyia*, Osten-Sacken.

LIMNOBIORHYNCHUS.

*Limnobiorhynchus*, Westw. (females only), 1835.
*Toxorhina*, Loew (Bernstein, &c.), and 'Linnæa Entomologica,' vol. v. p. 400.

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ASTHENIA.*

Westw. in Guérin-Ménev. Mag. Zool. 1842, Ins. pl. 94; Walker, Cat. Dipt., Brit. Mus., pt. i. p. 28.

*Liponeura*, Loew, Stettin Ent. Zeit. 1844.
*Apistomyia*, Bigot, Ann. Soc. Ent. France, 1862.
*Blepharocera*, Loew, Cent. iv. 1863; Osten-Sacken, 'Western Diptera,' p. 194.
*Paltostoma*, Schiner, Verh. zool-bot. Ges. Wien. 1866.
*Hammatorhina*, Loew, Bull. Soc. Ent. Ital. 1869.
*Bibiocephala*, Osten-Sacken in Hayden's Geol. Rep. 1873.
*Hapalothrix*, Loew, Ent. Mon. Berl. 1876.

Caput mediocre, oculis maximis fere omnino occupatum. Oculi antice emarginati pro insertione antennarum. Antennæ breves simplices, attenuatæ, 15-articulatæ, articulo 1mo magno, reliquis magnitudine et crassitudine sensim decrescentibus. Trophi elongati rostrum [longitudine capitis] formantes. Labrum elongatum corneum; mandibulæ planæ corneæ interne valde denticulatæ, labro paullo longiores; palpi 5-articulati, mandibulis paullo breviores, articulis apicalibus gracilioribus. Partes reliquæ oris in situ haud conspicuæ. Thorax ovalis supra mediocriter convexus. Abdomen sessile in specimine nostro unico mutilatum, inde sexum haud possum determinare. Pedes elongati debiles simplices, longitudine fere æquales. Coxæ minutæ. Tibiæ ecalcaratæ. Tarsi 5-articulati, articulo 1mo longiori, reliquis longitudine decrescentibus; unguibus duobus longis gracilibus, versus basin interne dente munitis terminati. Alæ magnæ teneræ, cellula unica subcostali, ad apicem venas tres longitudinales emittenti, vena proxima interna bifida, anali simplici.

Genus novum ad distributionem naturalem familiæ Tipulidarum utilissimum, habitum Cecidomyiarum exhibens, quamvis generibus *Macropezæ*, *Spheromiadi*, Curt., et *Hydrobæno*, Fries, magis affine. E *Macropeza* differt pedibus longitudine æqualibus, tarsis simplicibus et conformibus, ore haud longe rostrato, antennarumque articulis 5 ultimis præcedentibus haud longioribus; e *Spheromiadi* etiam eodem modo antennis differt, nec non alarum venisque crassis et pedibus longioribus, cum tarsis simplicibus; *Hydrobænus* denique ex hoc genere

* [This name is preoccupied in *Lepidoptera*.—W. F. K.]



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antennis ad apicem clavatis, thoraceque cristato facile distinguitur.

*Asthenia fasciata.*

Westw., *op. cit.* supra.

Luteo-fulva, thoracis dorso testaceo; abdomine fusco, segmentis ad basin albo fasciatis. Caput obscurum, oculi brunneo-nigri; antennæ nigræ, articulo 1mo et dimidio basali 2di flavis. Thorax luteo-flavus, dorso mesothoracis testaceo. Pedes lutei, tarsis fuscescentibus; alæ vitreæ vix luteo tinctæ, venis basique lutescentibus; halteres lutei, clava nigra. Expans. alar. 6¼ lin.

*Hab.* In Albania (Dom *S. S. Saunders*).

MEGISTOCERA, *Wiedemann.*

*Megistocera dimidiata.* (Pl. XVIII., fig. 9, details).

Westw., Zool. Journ., vol. v. p. 451 (September, 1835); Ann. Soc. Ent. France, vol. iv. p. 682 (1835).

Fulvo-ochracea, thorace interdum obscurius bivittato, ano obscuro, antennis longissimis fuscis basi fulvis; femoribus tibiisque ad apicem obscuris; alis in utroque sexu hyalinis, costa lata luteo-fuscanti, cellula prima submarginali vena obliqua sub stigmate divisa. Abdomine abbreviato; fœm. antennis brevibus 13-articulatis. Expans. alar. mas et fœm., 16—16½ lin.

*Hab.* In Australasia. In Mus. Hopeiano Oxoniæ (*olim Hawortlii et nostr.*).

Descriptio maris fere cum mare *M. disparis*, Walker,* convenit. Differt palpis flavis, apice nigris, thorace omnino ferrugineo postice pallidiori. Fœmina mari simillima; capite omnino ochraceo, antennis ochraceis apicem versus fuscescentibus, palpis similiter coloratis pedibus ochraceis, apice femorum tibiarum tarsorumque nigro; abdomine ochraceo, apice obscuro.

*Obs.* 1. In specimine nostro *M. disparis*, Walk., caput ochraceum maculis duabus parvis inter oculos notatum est, palpi et nasus nigricantes et cellula prima submarginalis (sub stigmate) vena obliqua dividitur.

* *Megistocera dispar*, Walker, Ent. Mag. ii. 468 (January, 1835) = *Tipula costalis*, Swederus, Act. Holm. 1787, p. 286; Walk., Cat. Dipt. Brit. Mus., pt. iv., Appendix, p. 1151 = *Megistocera limbiennis*, Macq., Dipt. Exot. i. 60, pl. 6, fig. 1.

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*Obs.* 2. Descriptiones *Megistoceræ* specierum e sexu masculino depromptæ. In specie supra descripta et in *M. dispare* antennæ fœm. sunt capite breviores et 13-articulatæ, articulo 1mo majori, 2do parvo, 6 proximis magnis subnodosis sensim minoribus, reliquis 5 gracilibus filiformibus. An structura eadem in femineis specierum Wiedemanni?

*Obs.* 3. "Your *Megistocera dimidiata* will now be better placed in the genus *Macrothorax*, Jaennicke, Neue Exot. Dipt. (1867)."—Baron Osten-Sacken *in litt.*, 18th March, 1881.

CALOPTERA.

Guérin, Voy. Coquille, pl. 20.

*Caloptera Nepalensis.*

Westw., Ann. Soc. Ent. France, vol. iv. p. 681 (1835).

Nigra, abdomine plumbeo cincto; alis nigricantibus, basi flavis, fasciaque incompleta centrali transversa, alba ornatis. Mas et fœm. Long. corp. maris, 10 lin. Expans. alar. 16 lin.

*Hab.* In Nepalia. In Mus. Hopeiano Oxoniæ (*olim nostr.*).

CEROZODIA.

Westw., Lond. & Edinb. Phil. Mag., vol vi., April, 1835, p. 281.

*Ozocera*, Westw., Zool. Journ., vol. v. No. 20, p. 449 (September, 1835).
(Nec *Ozodicera*, Macquart).

*Limnobiæ* affinis. Alarum venæ ut in *Gynoplistia nervosa* (fig. 10) dispositæ. Antennæ, thorace longiores 32-articulatæ; articulis 3tio ad 31mum ramulum longissimum gracilem pilosum e basi emittentibus (fig. 5); oculi maris maximi interne lunati, subtus fere conniventes. Palpi perbreves 3-articulati, articulo 1mo minuto, 2do majore subovato, 3tio paullo majori, spatuliformi. Thorax ovato-rotundatus. Abdomen maris longum cylindricum, unguibus duobus terminatum.

The insect forming this genus exceeds all the other pectinated *Tipulidæ* in the great number of the ramose joints of the antennæ.

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*Cerozodia interrupta.* (Pl. XIX., fig. 13, details).

Westw., Lond. & Edinb. Phil. Mag. *l. c.* supra; Zool. Journ. v. p. 449, pl, xxii. fig. 5, antenna.

Pallide ochracea, thorace subobscuriore; oculis nigris; antennarum ramulis pallide fuscis; alis pallidis venis subfuscis, linea gracili interrupta cinerea per areolam elongatam subcostalem currente. Long. corp. 10 lin. Expans. alar. 16 lin.

*Hab.* In Australasia apud Swan River. In Mus. Hopeiano Oxoniæ.

OZODICERA.

Macq., Dipt. Exot., p. 92; Westw., Lond. & Edinb. Phil. Mag., vol. vi. p. 280. (Nec *Ozocera*, Westw., Zool. Journ., No. 20.)

*Hemicteina*, Westw., in Zool. Journ. vol. v., No. 20, p. 450 (September, 1835).

*Tipulæ* affinis. Rostrum capite æque longum. Palpi articulo ultimo præcedente quadruplo longiore annulatissimo. Antennæ maris graciles 13-articulatæ, thoracis longitudine, singulo articulorum 4—9 ramum subtus emittente, articulum longitudine æquante; articulis 10—13 longioribus simplicibus, gracillimis (tab. xxii. fig. 17) alæ areola discoidea, subapicali, 6-angulata, postice venas 4 simplices emittente (fig. 16) abdomen maris elongatum clavatum. Pedes omnes (præsertim tarsi) longissimi.

*Ozodicera pectinata.*

Wiedemann, Westw., Lond. & Edinb. Phil. Mag. vi. p. 280, April, 1835.

*Ozodicera ochracea*, Macq., Dipt. Exot., p. 92.

*Ozodicera gracilis.* (Pl. XVIII., fig. 8, details).

Westw., Lond. & Edinb. Phil. Mag. vi. 281.

*H. gracilis*, Westw., Zool. Journ. vol. v. p. 450; pl. xxii. figs. 16, 17.

Mas. Fusco-ochracea, oculis nigris, rostro subfulvo; thorace subvittato; alis pallide subfuscescentibus; venis obscurioribus; abdomine segmentis duobus apicalibus nigris, ano fulvescente; pedibus unicoloribus subfuscis. Long. corp. maris, 10 lin. Expans. alar. 16 lin.

*Hab.* In Brasilia. In Mus. Hopeiano Oxoniæ (*olim nostr.*).

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*Obs.* Congenerica est, at species minor, pedibusque orsan brevioribus *Tipula pectinata*, Wied., "ochracea, horace vittato, antennis pectinatis, alis flavidis. Long. orp. maris 8 lin." Wiedemann (Aussereurop. Zweifl. Ins. ol. i. p. 47) observes that in its 4-jointed palpi *T. pectinata* pproaches the *Limnobiæ*, in its pectinated antennæ the *tenophoræ*, and in the number of the joints of the ntennæ and venation of the wings the *Tipulæ*.

"A speciebus cæteris (vere Tipulideis) longipedalibus auctoribus descriptis species nostra differt; scil *Limobia longimana*, Fab., tarsorum anticorum apicem album abet—*Tipula longipes*, Fab., pedes albo annulatos apicius albis—*Tipula breviventris*, Wied., tibias basi alba ossidet—*Polymera hirticornis*, Wied., Fab. (*Chironomus*) ntennis 28-articulatis gaudet—*Leptotarsus Macquartii*, uér. Voy. Coq. Ins. pl. 20, f. 1, abdomen fulvum nigromaculatum antennasque (e figura) 10-articulatas simlices habet—*Dolichopeza sylvicola*, Curtis, 1825 (*Leptina*, Meigen, vol. vi. tab. 21. *Dolichopeza* in textu), antennis 2-articulatis cellulaque discoidali subapicali nulla audet."

*Ozodicera longipedalis.*

Westw., Trans. Ent. Soc. Lond. 1876, p. 503, pl. iii., gs. 4, 4*a*, 4*b*.

*Hab.* In Australia. In Mus. Britann.

*Obs.* "Your *Ozodicera longipedalis* is the same as *edicia gracilis*, Walk., List, &c., i. 37 (*sine patria*); but do not think that species described without locality eserve any recognition, especially when they are placed the wrong genus." Osten-Sacken *in litt.*, 18th March, 881.

*Pedicia gracilis* is now marked in the British Museum from New Zealand.

PTILOGYNA.

Westw., Lond. & Edinb. Phil. Mag.. vol. vi., p. 280 pril, 1835); Zool. Journ. vol. v. No. 20, p. 448 (September, 1835).

*Tipulæ* affinis. Rostrum capiti æque longum; antennæ aris 13-articulatæ; ramulis 7 internis et 15 externis ngis instructæ, articulo 3tio ramum unicum e basi emitnte; articulis 4 ad 9 ramos duos longos e basi, alternque e medio paullo breviorem emittentibus, 10mo longo

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ramis duobus basalibus alteroque brevi fere apicali; 11 ad 13 brevibus simplicibus; fœm. 14-articulatæ, thoracis vix longitudine, graciles, ramulis 7 internis et 8 externis brevibus articulo 1mo crasso, 3tio ad apicem infra producto, singulo articulorum 4 ad 10 ramos duos ad basin emittente, ramo externo quam articulum ipsum paullo longiore, interno breviore, articulis 4 terminalibus simplicibus (tab. xxii. fig. 15, antenna fœm.). Alæ (fig. 14) cellula discoidea subapicali 7 angulata, venis fere ut in *Limnobia bisulcata*, Schum., dispositis (*vide* Schill. Beitrage, tab. 1, Dipt. fig. 3A).

*Ptilogyna ramicornis.* (Pl. XIX., fig. 14).

*Tipula ramicornis*, Walker, Ent. Mag. ii. 469 (January, 1835).

*Ptilogyna ramicornis*, Westw., Lond. & Edinb. Phil. Mag. vol. vi. p. 280 (April, 1835).

*Ptilogyna marginalis*, Westw., Zool. Journ. vol. v. p. 448, pl. xxii. figs. 14, 15, ♀ (September, 1835).*

Fusca; capite, antennarum basi, thorace postice, præsertim in mare, segmentorum abdominalium lateribus femoribusque (nisi apice), fulvis; alis ad costam dimidiato-fuscis, maculis duabus parvis ante medium alterisque duabus apicalibus pallidis; venis (nisi internis) fusconubilis. Long. corp. fœm. 11½ lin. Expans. alar. 18½ lin. Mas paullo minor.

*Hab.* In Australia. In Mus. Hopeiano Oxoniæ (*olim nostr.*). Mas et fœm.

BITTACOMORPHA.

Westw., Lond. & Edinb. Phil. Mag. vol. vi. p. 281, 1835.

Genus anomalum *Tipulariis terricolis*, Latr., evidenter pertinens. Caput et thorax parva. Abdomen valde elongatum et depressum. Pedes longitudine mediocres, femoribus tibiisque gracilibus; tarsis basi dilatatis dense ciliatis; alæ venis perpaucis fere ut in genera *Sciaphila* dispositis: antennæ graciles, filiformes. Palpi capitis longitudine articulis 4 æqualibus. Lobi labiales magni. Ocelli 0?

* The long delay in the publication of this part of the 'Zoological Journal' deprived my names of this and several other species of their priority.

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*Bittacomorpha clavipes.* (Pl. XIX., fig. 12).

*Tipula clavipes*, Fab. Sp. Ins. 2, 404.

*Ptychoptera clavipes*, Fab. Syst. Antl.; Wied. Auss. Zweifl. Ins. i. 59.

Long. corp. 8 lin. Expans. alar. 8¼ lin.

*Hab.* In America Septentrionale, Newfoundland. In Mus. Hopeiano Oxoniæ; olim nostr. (Dom *Churton*).

SEMNOTES.

Westw., Trans. Ent. Soc. Lond. 1876, p. 501.

*Semnotes imperatoria*, Westw., *op. cit.*, p. 502, pl. iii. fig. 1.

*Hab.* In Australia, Melbourne. In Mus. Hopeiano Oxon. et Britann.

*Semnotes ducalis*, Westw., *op. cit.*, p. 503, pl. iii. figs. 2*a*, 2*b*.

*Hab.* In Australia boreali (*Damel*). In Mus. Hopeiano Oxoniæ.

TIPULA.

*Tipula Brobdignagia*, Westw., Trans. Ent. Soc. Lond. 1876, p. 504, pl. iii. fig. 3.

*Hab.* In China boreali. In Mus. Britann.

*Tipula Mikado*, Westw., Trans. Ent. Soc. Lond. 1876, p. 504.

*Hab.* In Japonia. In Mus. Hopeiano Oxoniæ.

LIMNOBIA.

*Limnobia Satsuma*, Westw., Trans. Ent. Soc. Lond. 1876, p. 504, pl. iii. figs. 5*a*, 5*b*.

*Hab.* In Japonia. In Mus. Hopeiano Oxoniæ.

LIBNOTES.

Westw., Trans. Ent. Soc. Lond. 1876, p. 505.

*Libnotes Thwaitesiana*, Westw., *op. cit.*, p. 505, pl. iii. figs. 6*a*, 6*b*.

*Hab.* Ceylon. In Mus. Hopeiano Oxoniæ.

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PLATYURA.

Westw., Trans. Ent. Soc. Lond., 1st series, vol. v., p. 231 (= *Platyroptilon*, Westw.)

*Platyura* (*Platyroptilon*) *Miersii*, Westw., *op. cit.*, p. 231, pl. 23, fig. 3, and details.

*Hab.* In Brasilia. In Mus. D. Miers (nunc in Mus. Hopeiano Oxoniæ).

CULEX, *Linn.*

*Culex alternans*, Westw., Ann. Soc. Ent. France, vol. iv. p. 681 (1835).

Pallide fuscescens; abdomine albido-annulato, alis hyalinis; venis, præsertim costalibus, fulvescentibus, squamis fuscis ornatis, nisi regione stigmaticali, ubi squamæ albæ videntur, aliis albo nigroque alternatis; pedibus fulvescentibus, fusco squamosis; femoribus ante apicem, tibiis versus et pone medium, geniculis tarsisque albo annulatis. Long. corp. (probosc. excl.) 4 lin. Expans. alar. 8 lin.

*Hab.* In Nova Hollandia. In Mus. Hopeiano Oxoniæ (*olim nostr.*).

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## EXPLANATION OF THE PLATES.

### PLATE XVII.

FIG. 1. *Mongoma fragillima*, natural size; 1 *a*, antenna; 1 *b*, wing; 1 *c*, extremity of anterior tibia; 1 *d*, extremity of anterior tarsus.

2. Details of *Dapanoptera plenipennis*; 2 *a*, head, seen sideways; 2 *b*, wing; 2 *c*, extremity of body.

3. *Sigmatomera Amazonica*, magnified; 3 *a*, head, seen in front; 3 *b*, head and antennæ, seen sideways; 3 *c*, wing; 3 *d*, apex of tibia.

### PLATE XVIII.

FIG. 4. *Eriocera lunata*, natural size; 4 *a*, head and antennæ of male, magnified; 4 *b*, head, sideways; 4 *c*, wing; 4 *d*, extremity of tibia; 4 *e*, apex of abdomen, from above; 4 *f*, ditto, seen sideways; 4 *g*, one of the male appendages at the extremity of the body.

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Fig. 5. *Gynoplistia Wakefieldii*, details; 5 *a*, head of male, seen sideways; 5 *b*, palpus of ditto; 5 *c*, antenna of ditto; 5 *d*, antenna of female; 5 *e*, wing; 5 *f*, extremity of body of male, seen sideways; 5 *g*, ditto, seen from above; 5 *h*, extremity of body of female.

6. *G. vilis*, antenna of male.

7. *G. annulata*, antenna of female.

8. *Ozodicera gracilis*, details; 8 *a*, antenna of male; 8 *b*, wing.

9. *Megistocera dimidiata*, details; 9 *a*, head and base of antenna of male; 9 *b*, antenna of female; 9 *c*, extremity of wing.

## PLATE XIX.

Fig. 10. *Limnobiorhynchus Brasiliensis*, female, natural size; 10 *a*, head and rostrum magnified; 10 *b*, antenna of female; 10 *c*, wing.

11. *Geranomyia Brasiliensis*, male, details; 11 *a*, rostrum with the parts separated (*a*, one of the maxilla, with its subapical style; *b*, *c*, labrum; *d*, mentum; *e*, labial palpi; *f*, laciniæ of labium); 11 *b*, basal portion of the rostrum, with the parts similarly lettered; 11 *c*, labial palpi, magnified; 11 *d*, bases of laciniæ of labium; 11 *e*, extremity of maxilla, with its style; 11 *f*, antenna of male; 11 *g*, wing of male.

12. *Bittacomorpha clavipes*, details; 12 *a*, head, seen in front; 12 *b*, wing.

13. *Cerozodia interrupta*; 13 *a*, head of ditto, seen from above: 13 *b*, ditto, seen from below; 13 *c*, antenna of male.

14. *Ptilogyna ramicornis*, details; 14 *a*, antenna of male; 14 *b*, antenna of female; 14 *c*, extremity of wing.



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XXIII. *Description of a new genus of Hymenopterous insects.* By J. O. Westwood, M.A., F.L.S., &c.

[Read August 3rd, 1881.]

Plate XVI.

Dyscolesthes, n. g.

Genus novum ad Hymenoptera aculeata referendum, amiliæ autem mihi dubium, characteribus e mare unico epromptis.

Corpus breve, subovale, valde setosum nigrum, setis inereis omnino vestitum. Caput thorace multo minus t angustius, oculis satis magnis lateralibus; ocellisque ribus verticalibus: os haud prominens, mandibulis uobus acutis falcatis, intus prope apicem dente parvo cuto armatis. Maxillæ latæ stipite plano subovali extus etoso, intus ad apicem lobo tenui membranaceo instructæ, alpis duobus minutis 2-articulatis apice setigeris. Ientum subovale palpis labialibus mento longioribus, -articulatis apice setigeris. Antennæ longæ graciles ylindricæ, haud geniculatæ; articulis 13, articulo 1mo inuto, 2ndo brevissimo, 3tio et reliquis elongatis, ngulo paullo curvato. Thorax brevis ovatus compactus, bdominis magnitudine fere æqualis. Abdomen ovale, gmento 1mo cum sequenti continuo, nec pedunculato ec ad apicem constricto; genitalibus masculinis tractis et nullo modo exsertis, apice abdominis spinulis ibus minutis armato. Alæ magnitudine mediocres, re longitudine thoracis et abdominis æquales, hyalinæ, anslucidæ; venis (nisi ad basin alarum) destitutæ; nticæ vena tenui subcostali e basi extendenti ad stigma agnum nigrum ante medium marginis antici positum, ea angusta basali ad stigma extensa alteraque completa minuta ad basin alæ. Alæ posticæ area inuta ovali subbasali venaque gracillimo obliqua ad arginem posticum currente. Venæ discoidales et icales in omnibus alis obsoletæ. Pedes graciles ngitudine mediocres, valde setosi; tibiæ pedum 2 an-orum breves, calcari unico curvato, plano, apice tuso. Tarsi antici mediocres, articulo 1mo subtus



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inciso pro receptione calcaris. Pedes 4 postici longiores et graciliores, tibiæ calcari unico fere longitudine articuli 1mi tarsorum, apice unguibus duobus; singulo intus prope basin spinula tenui armato.

*Dyscolesthes canus*, n. s.

Statura et habitus Andrenæ minutæ. Totus niger, nitidus, punctatus; griseo valde setosus; antennis testaceis; segmentis abdominalibus postice piceo-marginatis. Long. corp. 4 lin. Expans. alar. 6½ lin.

*Hab.* Chili (*Reed*). In Mus. Hopeiano Oxoniæ.

It is unfortunate that our knowledge of this curious insect is confined to a single individual of the male sex. That it belongs to the Aculeate division of the order *Hymenoptera* may be affirmed from the structure of the 13-jointed antennæ; in the very minute size, however, of the basal joint the insect disagrees with the great proportion of the aculeate species, there being no trace of geniculation; whilst the length of the antennæ, as well as the number of joints, clearly show that the insect is a male. It is in the ant genus *Myrmecia*, from New Holland, that we find somewhat similar male antennæ, but the whole form of this insect and the dense coating of greyish white setæ are not found in any other species of *Formicidæ*, from all of which this insect differs in the absence of one or more constricted segments at the base of the abdomen. The construction of the lower parts of the mouth seems again to point to the most aberrant of the *Formicidæ*, several of which were described by myself in the 'Annals of Natural History' for 1840, vol. vi. In the genera *Typhlopone*, *Anomma*, and *Solenopsis*, we find extremely minute maxillary palpi composed of only two apparent joints. The legs are well developed, but the curious spur of the anterior tibiæ differs from that of any hymenopterous insect with which I am acquainted; the fine tooth with which each of the tarsal ungues is furnished merits attention, whilst the very curious structure of the wings, the greater portion of which are quite hyaline, colourless, and apparently veinless, but with a large black stigma, is quite unique. We find indeed in *Meria* and some of the *Proctotrupidæ* the veins are restricted to the base of the wings, and in some of the latter there is a large black stigma; but the whole character of this insect

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emoves it from the families to which those genera elong. Its nearest allies are most probably to be ound in the *Scoliidæ*, to which family the trispinose apex f the male abdomen lends a strong approximation. The emale, when discovered, will doubtless differ so much rom the male as to lead the discoverer at first to regard he insect of that sex as a distinct genus.

P.S.—In Gay's 'Historia de Chile,' tom. sesto, p. 305, genus is described, in Spanish, by the Marquis Spinola, nder the name of *Chestus*, which may possibly be dentical with the one above described. A short generic s well as specific Latin diagnosis is given, which are ither inaccurate or cannot apply to our insect. The eneric description is, "Antennæ corpori sublongitudine, *uodecim* articulatæ. Mandibulæ *breves*. Thorax *tri-artitus*, regionis propriæ nervuri obliterati." *Chestus Gayi*, pl. 3, fig. 8. *C.* antennis, capite, thorace, pedi-usque nigris; abdomine pilis fulvis; alis hyalinis, ervuris testaceis aut fulvis. Long. 5 lin.; lat. 2 lin. t is placed in the family *Mutillidæ*, near the *Thynnides*, nd it is suggested that it may be the male of the genus *Bradynobænus*, which has entirely the habit of a female *Mutilla*.

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## Explanation of Plate XVI.

Fig. 1. *Dyscolesthes canus*, magnified.
2. Hind leg of ditto.
3. Fore leg of ditto.
4. Spur of anterior tibia.
5. Antenna.
6. Tarsal ungues.
7. Maxillæ, labium and palpi.
8. Head, seen from above.
9. Base of hind wing.
10. Base of fore wing.

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## XXIV. *Neotropical* Pentatomidæ *and* Coreidæ. By W. L. Distant.

[Read August 3rd, 1881.]

Having recently, in 'Biologia Centrali Americana,' worked out the Central-American *Pentatomidæ* and *Coreidæ*, so far as materials sufficed, I beg here to add the descriptions of a few more species belonging to those families, from other portions of the Neotropical region, including one from Nicaragua not included in the above mentioned work.

### PENTATOMIDÆ.

*Edessa tauriformis*, n. s.

Above with head, pronotum and scutellum olivaceous, antennæ testaceous, pronotal protuberances black, corium dull dark testaceous, with the costal margin ochraceous, inwardly bordered with fuscous. Connexivum ochraceous, membrane cupreous. Under side of body and legs testaceous; anterior margins of pro-, meso-, and metasternums, segmental incisures, and three longitudinal fasciæ, one central and two lateral to abdomen, fuscous. Antennæ with the second joint a little longer than the third, fourth almost as long as second and third together (fifth wanting). Head somewhat obscurely, irregularly, and transversely striate. Pronotum very coarsely punctate and rugulose, especially on disk, pronotal angles produced into long and somewhat slender horns, directed a little forwards, with their apices subacute and slightly recurved. Scutellum not reaching apex of corium, basal portion very coarsely punctate, apical half much more finely so, and sulcated at apex. Corium very thickly and finely punctate. Long. 19 mm. Lat. pronot. angl. 20 mm.

*Hab.* Nicaragua, Chontales.

This species belongs to that group of the genus in which the lateral angles of the pronotum are largely produced with the apices subacute, and is allied to *E. hamata*, Walk. It will be figured in the Appendix to the Rhynchotal portion of 'Biologia Centrali Americana.'



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*Edessa nigromarginata*, n. s.

Above obscure ochraceous; lateral and anterior borders of pronotum with a submarginal and continuous series of black punctures. Abdomen above red; connexivum luteous, with a row of irregular black spots, situated two on each segment, segmental apices acute and testaceous. Body beneath and legs somewhat paler in colour; pro- and mesosternums with anterior submarginal and central transverse fasciæ, metasternum with a posterior submarginal fascia, ventral incisures, a lateral series of transverse fasciæ placed near stigmata, and an abdominal marginal border of irregular spots, black. Antennæ with the second joint slightly shorter than the third, together subequal in length to the fourth, which is a little shorter than the fifth. Pronotum somewhat sparingly and finely punctate, lateral angles moderately and subacutely produced, the apices rounded (but not thickened) and slightly recurved. Scutellum reaching the apical angles of corium, sparingly and finely punctate, the basal portion moderately raised, apex acute and sulcated. Corium thickly and finely punctate, the punctures on basal costal margin coarse and fuscous. Prosternum sparingly but coarsely punctate. Angles of apical segment of abdomen acutely produced. Anal appendage with two strong lateral and two smaller central spines. Long. 16 mm. Lat. pronot. angl. 12½ mm.

*Hab.* Jamaica. Mus. Science and Art, Dublin.

This species is closely allied to *E. montezuma*, Dist., but differs by the fuscous submarginal borders of punctures to the pronotum, and the much longer and differently punctured scutellum.

COREIDÆ.

*Petalops inermibus*, n. s.

♂. Above shining metallic-green, with bluish reflexions; central and lateral fasciæ to head, eyes, and apex of scutellum, luteous. Beneath with legs testaceous; under side of head, disk of sternum, a spot near anterior margins of meso- and metasternums in front of coxæ, and lateral margins of abdomen, luteous; prosternum and lateral sides of meso- and metasternums, shining metallic-green; tarsi ochraceous,

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membrane black. Body very slender and elongate. Antennæ black, first and third joints subequal in length, a little shorter than second, fourth longest. Pronotum elongate, granulose, with a central raised longitudinal levigate line, the lateral angles faintly prominent. Scutellum coarsely and transversely striate, much longer than broad, the apex levigate. Corium thickly and finely punctate, the nervures prominent and somewhat fuscous. Rostrum about reaching intermediate coxæ, the third joint longest, the apex pitchy. Posterior femora much incrassated, in length passing apex of abdomen, beneath with the basal half somewhat hollowed and with a double row of small spines, apical half with a row of six large spines arranged two singly and four in pairs, above more sparingly, irregularly, and less strongly spinous; posterior tibiæ compressed and spinous beneath; anterior and intermediate femora minutely spined beneath. Long. 15 mm.

*Hab.* Amazons, Ega (*M. de Mathan*). Colls. Oberthur and Distant.

This species, from the non-produced lateral angles of the pronotum, differs considerably from other species of this genus; the other structural characters, however, conform to those of *Petalops*.

*Sephina pantomima*, n. s.

Dull reddish, sparingly pilose. Antennæ, pronotum with anterior third and two wide central longitudinal fasciæ extending therefrom to base, scutellum, clavus basal angle, anterior half of costal margin, an irregular transverse fascia and apical margin (narrowly) of corium, and a series of large segmental quadrate spots on connexivum, black. Body beneath, rostrum, and legs, black; under side of head, lateral angles of pronotum, a large spot on pro- and mesosternums, two smaller ones on metasternum, a segmental marginal row of large subquadrate spots, two lateral spots on anal appendage, and a lateral series of somewhat irregular and obscure spots on each side of disk of abdomen, dull reddish. Membrane black, with the veins ochraceous. Antennæ strongly pilose, first and second joints subequal in length, longer than third and fourth, which are also subequal. Pronotum much depressed anteriorly, very sparingly and obscurely



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punctate, except on disk, which is somewhat wrinkled and very coarsely punctate; lateral angles produced into foliaceous processes, considerably raised, rounded in front, with the apices subacute and recurved, and posteriorly deeply sinuate near apices; lateral margins finely crenulated. Scutellum faintly and transversely striate. Corium thickly and finely punctate. Legs and rostrum strongly pilose. Long. 23 mm. Lat. pronot. angl. 9 mm.

*Hab.* Colombia, Medellin.

The markings of this species are very distinct, which, with the prominent pronotal angles, will prevent it being confused with any other species of the genus.

*Euagona Juno*, n. s.

Head above and beneath, pronotum, scutellum, clavus (excepting base, which is luteous), membrane, sternum, and under side of abdomen, black; the last with the lateral margins, ultimate segment, and anal appendage, testaceous; antennæ, legs, corium, base of costal margin of corium as seen beneath, and a slender undulating longitudinal line on under side of abdomen and inner side of stigmata, but not extending to apical segment, luteous. Antennæ pilose, basal joint curved, subequal in length to the second joint, third and fourth joints subequal but shorter than first and second, apical joint somewhat infuscated. Pronotum coarsely granulose, lateral angles produced into long lunate spines, directed forwards and slightly upwards, the apices attenuated and slightly reflexed; the head and pronotum more or less clothed with luteous pubescence. Scutellum transversely striated. Corium finely and obscurely punctate, with the inner margin sometimes black, and apical half of costal margin narrowly and darkly fuscous. Rostrum fuscous, about reaching intermediate coxæ. Underside of body more or less clothed with luteous pubescence. Legs pilose. Long., male 24 mm., female 29 mm. Lat. pronot. angl., male 8½ mm., female 9½ mm.

*Hab.* Peru.

Allied to *E. diana*, Dall., the only other known species of the genus; but differs by the considerably larger size, the black opaque membrane, different colour of the abdomen beneath, and by the pronotal angular processes,

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which are not so regularly lunate, and are more attenuated and subreflexed at apices.

*Paryphes splendidus*, n. s.

Basal half of head above, pronotum, scutellum, under side of head, and sternum, bright luteous. Anterior half of upper side of head, coxæ, legs, and abdomen, metallic shining green. Corium black, costal margins (narrowly), claval apical margins, from which two fasciæ extend direct to apical angles of corium, bright luteous. Membrane black. Abdomen above black, connexivum and abdominal margin beneath luteous. Antennæ obscure metallic-green, first and third joints subequal, second and fourth shorter and subequal. Pronotum and corium thickly and finely punctate; pronotal lateral angles subprominent, lateral margins minutely crenulated. Inner margins of luteous fasciæ to corium levigate. Prosternum distinctly punctate, meso- and metasternums wrinkled and subrugulose. Disk of sternum levigate. Rostrum pitchy, shining, about reaching posterior coxæ. Long. 19½ mm.

*Hab.* Ecuador.

Allied to *P. magnificus*, Stål, and *P. ducalis*, Stål.

*Harmostes incisuratus*, n. s.

Head ochraceous, distinctly punctate; antennæ ochraceous, basal joint slightly passing apex of head, second joint slightly shorter than third, fourth short, dark, and pilose. Pronotum ochraceous, punctate, and subrugulose; lateral and posterior margins, and a narrow central longitudinal line, pale luteous; lateral pronotal angles broadly produced, rounded, and slightly directed upwards, with their posterior margins deeply and profoundly notched. Scutellum pale ochraceous, with the lateral and apical margins, and a central longitudinal line, pale and levigate. Corium pale luteous, clavus and inner margin sparingly but coarsely and darkly punctate, apical half thickly, finely, and less darkly punctate, with the extreme apical angle terminating in a small fuscous point. Membrane pale hyaline, with two central longitudinal fuscous streaks. Abdomen above pale greenish, the base and two large central tooth-shaped spots fuscous. Body beneath pale luteous, sternum

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thickly and finely punctate, legs concolorous, apices tarsi and posterior femora fuscous. Long. 6 to 7 mm

*Hab.* Colombia, Cauca (las Babas) (*Dr. O. Thiem* Colls. Oberthur and Distant.

This species in general appearance is allied to *formosus*, Dist., from which, however, it differs widely the non-crenulated lateral margins of the pronotum, a the strongly-notched lateral angles of the same.

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## XXV. *Description of the female sex of* Morpho adonis, *Cram.* By W. L. Distant.

[Read August 3rd, 1881.]

Plate XX.

♂. *Papilio adonis*, Cram., Pap. Ex., i. t. 61, A. B. (1779).

*Morpho adonis*, Godt., Enc. Méth., ix. p. 439, n. 8 (1823).

♀. *Papilio marcus*, Schall., Naturf., xxi. p. 174, n. 4, t. 4, f. 1, 2 (1785).

*Zeuxidia marcus*, Kirby, Syn. Cat. Diurn. Lep., p. 116, 8 (1871).

Under the name of *P. marcus*, Schaller undoubtedly described and figured the female sex of this butterfly. The figure itself, however, is so indifferent, the colour being actually misleading,—no locality being cited as a habitat,—that lepidopterists have apparently been unable either to identify the insect or place it in its proper genus; Mr. Kirby in his most useful Catalogue not omitting to record the species, and placing it with probability—from the figure—in the genus *Zeuxidia*. Having acquired a specimen from British Guiana, and examined the unrivalled collection of the genus *Morpho* in the possession of Messrs. Godman and Salvin, I have come to the conclusion that this butterfly is certainly the female sex of *M. adonis*, Cram. Although very dissimilar in coloration above to the male sex, a like contrast is exhibited in the sexes of some allied species, and whereas in *Morpho cypris* the females are dimorphic, it is possible that the form here described may prove also to be but one dimorphic phase of the female of *M. adonis*.

*Morpho adonis*, Cram., female. (Pl. XX., figs. 1, 2).

Wings above brown, with the following pale stramineous markings: primaries with a costal streak



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commencing about end of cell, but not reaching apex; a large irregularly-shaped spot a little beyond end of cell, commencing on fourth subcostal nervule and terminating between first and second discoidal nervules; a broad suboblique fascia, commencing at the end of median nervure where it is narrowest, and extending to inner margin where it is widest, profoundly sinuated inwardly above and below second median nervule, and somewhat regularly waved and sublunate outwardly between median nervules; this fascia is immediately followed by a double row of spots, irregular both in size and shape, arranged in pairs between the nervules, commencing between fourth and fifth subcostal nervules, and terminating in a single spot between third median nervule and submedian nervure; a submarginal row of irregularly-shaped and smaller spots situated between the nervules, and gradually increasing in size and distinctness from apex, followed by a series of the same, but much more obscure on posterior margin. Secondaries with an oblique fascia commencing on costa at junction of fascia on primaries, and gradually narrowing till it terminates on third median nervule a little before margin; a submarginal row of elongate and almost continuous spots, followed by a series of similar but more obscure spots on posterior margin; at the termination of central fascia the submarginal row of spots is continuous to anal angle, much waved and bordered outwardly and inwardly with dark brown; anal angle creamy white, with a large fuscous spot at end of submedian nervure, and two pyramidal spots of the same colour on each side of the termination of third median nervule. Wings beneath pale violaceous, the stramineous fasciæ and spots of the upper side visible but paler in colour, and two narrow waved oblique and obscure stramineous fasciæ extending through cell of primaries and terminating on abdominal margin of secondaries; all the pale fasciæ and spots margined inwardly and outwardly with ferruginous, and a posterior submarginal castaneous narrow fascia to both wings. The following ocelli with pale centres and yellow margins bordered with black are placed on each wing; four on primaries situated one between first and second discoidal nervules, midway between end of cell and posterior margin, the second between first and second median nervules, third and largest after second median nervule, and fourth

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and smallest before submedian nervure; three on secondaries, first on the two subcostal nervules near their origin, second between second and third median nervules on inner margin of central fascia, and third between the last mentioned nervule and submedian nervure near anal angle, followed inwardly by a small, obscure, and subdeveloped ocellus. Fuscous spots at anal angle as above. Exp. wings, $5\frac{2}{10}$ inch.

*Hab.* British Guiana.

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XVI. *Descriptions of new Genera and Species of* Heterocerous Lepidoptera *from Japan.** By Arthur G. Butler, F.L.S., F.Z.S., &c.

[Read August 3rd, 1881.]

## GEOMETRITES.

### ENNOMIDÆ.

91. *Therapis straminea*, n. s.

Pale straw-yellow, the wings white towards the basal rea; primaries with slender blackish dashes across the ostal border; the base of this border speckled with lackish; the basal half of the second median interpace and a curved submarginal line from it to the apex uff-yellow flecked with black; a subapical black lunule ose to the outer margin; the apical fringe blackish ith bisinuated black inner line, being the commencement of an interrupted lunulated black marginal line; econdaries minutely and sparsely speckled with blackish cales; a slender blackish marginal line interrupted at he ends of the nervures as in the primaries; wings elow pale creamy stramineous, whitish towards the nternal area of primaries and the base of secondaries, rrorated with brown, and with a brown marginal line; rimaries with a small brownish spot at the origin of he second median branch, and an oblique subapical ellowish streak flecked with brown; apical fringe black, ith sordid white centre between the veins; secondaries ith an arched series of black dots on the veins beyond he middle; body pale creamy buff or sordid white, he legs slightly brownish; expanse of wings, 1 inch lines.

Tokei (*Fenton*).

The following species I must for the present refer rovisionally to *Epione*, in which genus I have placed heir allies; at the same time they appear to me to

* Continued from p. 200, *ante*.



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be intermediate between that group and *Therapis*, the dentate-sinuate character of the margin being very variable in different examples of the same species; in pattern these insects more nearly resemble *Strenia* than any other group. A remark which I made in a previous paper respecting *E. arenosa*, *strenioides*, and *leda* has been misunderstood by my friend Hauptmann von Hedemann, who supposes that I regard these three species as varieties of one insect: had I done so I should not have described each separately as a new species; *E. arenosa* at least is a perfectly distinct thing, even if all the others should prove to vary into one another, but I am rather inclined to believe that they will remain separate.

92. *Epione ossea*, n. s.

Bone-white, with a faint golden gloss; wings minutely and sparsely irrorated with brown; a sinuated brown marginal line; fringe white, with brown spots at the extremities of the veins; primaries with the basi-costal area occupied by an oblong greyish brown patch, followed immediately by a curved brown costal dash, and below this by a few brown scales; two slightly sinuous parallel undulated dark brown parallel lines, one across the middle and the other across the disc, both obsolete towards the inner margin; a very irregular externo-discal brownish streak; median and lower radial veins dark brown; secondaries crossed beyond the middle by a slender streaky brown line; a pale buff irregular submarginal line; body with a dorsal longitudinal brown band spotted with white, and with sinuated margins; wings below almost as above; body below pale creamy buff; expanse of wings, 1 inch 8 lines.

Tokei (*Fenton*).

Allied to *E. strenioides*.

93. *Epione lachrymosa*, n. s.

Dark greyish brown, with slight cupreous reflections wings crossed beyond the middle by a double sinuous and dentate-sinuate black line, between which, on the secondaries, is a row of white spots; immediately beyond this double line is a white band mottled with black, which on the primaries is widely interrupted in the middle,—on the secondaries, however, it is only interrupted

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by the nervures, is narrower than on the primaries, and more sordid; beyond this is a series of unequal white spots, submarginal on the primaries, marginal and confined to the anal half on the secondaries; wings below nearly as above, but the costal border of the primaries and the basal area of the secondaries mottled with pale testaceous; a dusky zigzag stripe across the basal third of the secondaries; body below testaceous; expanse of wings, 1 inch 8 lines.

Tokei (*Fenton*).

Allied to *E. leda*.

94. *Tacparia? morosa*, n. s.

Primaries above with the basal three-fifths greenish grey, sericeous, mottled with black; the basal two-fifths, from inner margin to costal vein, reticulated with dark cupreous-brown; the external two-fifths rust-red towards the costa, and rosy cupreous towards the external angle and border; a transverse discal series of white-pupilled black spots and an apical oblique bluish white streak, with a white spot at each end; fringe with a basal series of white dots; secondaries grey, sericeous, speckled with black, crossed before the middle by two parallel ferruginous stripes, and beyond the middle by a series of small blackish spots; fringe darker, as in the primaries, and with a similar basal series of white dots; thorax dark cupreous-brown; antennæ and vertex of head white; abdomen grey; under surface pale shining greyish brown or drab, speckled with black; primaries crossed by a broad diffused discal ferruginous belt; expanse of wings, 1 inch 5 lines.

Tokei (*Fenton*).

I do not feel certain that this species would not be better placed under *Cratoptera*; the two genera are nearly allied; it has the general coloration of *C. icaunaria*.

95. *Gynopteryx lapidea*, n. s.

Upper surface sericeous stone-grey, with lines as in *G. grata*,* but differently coloured; primaries with a grey line, elbowed close to the costa, across the basal third; a very oblique subapical costal red-brown dash; a black

* *Epione grata*, Butler.

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dot at the end of the cell; an oblique ferruginous strip with pale outer edge from the apex of the primaries t just below the middle of the abdominal margin secondaries; wings below yellow, mottled with rust-red the primaries with the base of costal border, interm border, and external area mottled with lilacine-grey an glossy; external area bounded within by an angulate ferruginous line; a black dot at the end of the cell secondaries paler than the primaries; external are similar, but paler; expanse of wings, 1 inch 7 lines.

Nikko (*Maries*).

This species is as large as *G. thasusaria*.

96. *Endropia evanescens*, n. s.

Wings above sericeous, sordid whitish; primaries wit the basal and apical fourths and the centre of cost border brown flecked with black, the central and apic patches being separated by a pure white oblong spot; scarcely perceptible dusky undulated line across t basal third, and two similar parallel oblique lines acro the disc; two black dots at the end of the discoidal cel external border greyish towards apex; fringe blackish secondaries pearl-grey towards the external borde changing to almost pure white towards the base; frin dusky; thorax greyish brown; abdomen sordid whitis primaries below grey; the costal and apical borders la brown, striated with blackish; a subapical costal wh spot and an apical oblique white dash; a black disc cellular litura; internal area whitish; the discal lines above; secondaries laky brown, speckled with blackis a brown-bordered undulated discal line; a black dot the end of the cell; pectus sordid white; legs fleck with grey; abdomen dull pale rosy brown; expanse wings, 1 inch 7 lines.

Yokohama (*H. Pryer*).

97. *Garæus fenestratus*, n. s.

Intermediate in character between *G. mactans* *specularis*, most like the latter, from which it chi differs in the broader and whiter central belt, gre external area, and the regularly incurved blackish limiting the central belt internally at basal third

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primaries; from *G. mactans* it differs in its narrower central belt, which is sericeous golden yellow varied with semitransparent white, and flecked with brown, and in the possession of the other hyaline spots which occur in *G. specularis*; expanse of wings, 1 inch 6 lines.

Tokei (*Fenton*).

As both *G. mactans* and *G. specularis* are figured species, there should be no difficulty in identifying *G. fenestratus*.

98. *Pericallia testacea*, n. s.

Wings above sordid ochreous, shading into testaceous towards the base, and speckled with blackish, crossed in the middle by two rather widely separated badly limited greyish brown stripes, the outer one minutely undulated and well defined on the secondaries, excepting towards the apex in the male, where it expands into a diffused dark greyish patch; primaries with the costal third between the two central stripes occupied by a pale patch, white in the female, and between this patch and the apex two cuneiform costal spots, bright yellow in the male, but white in the female; a small brown-edged semitransparent whitish lunule at the end of the cell; body testaceous; under surface stramineous, flecked with grey and banded with clay-brown; markings nearly as above; female paler than male; expanse of wings—male 1 inch 9 lines, female 2 inches 1 line.

Tokei (*Fenton*).

Evidently a common species.

BOARMIIDÆ.

99. *Hemerophila atrilineata*, n. s.

Testaceous; the wings above covered with innumerable short grey-brown striæ; primaries with a broad grey-brown ill-defined belt from the inner border to the outer margin below the apex; two sharply defined oblique jet-black lines, the inner one running from the base of inner margin to costa, and deeply dentate-bisinuate above the second median branch; the outer one slightly sinuous, and running from the middle of the inner margin to the apex; a pale undulated submarginal stripe; secondaries most densely striated towards the base; a jet-black

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alternately subangulated line from abdominal margin to costa near the apex; external border dusky, traversed by a pale line; prothorax and abdomen pale greyish brown, rest of body dusky; under surface whity brown; wings densely flecked with greyish brown, with blackish disco-cellular spots and ill-defined undulated discal line; fringe spotted with grey; expanse of wings, 2 inches 3 lines.

Tokei (*Fenton*); Yokohama (*H. Pryer*).

100. *Boarmia paupera*, n. s.

Apparently nearest to *B. repandaria* of Europe; sericeous greyish white, mottled with grey; wings above crossed in the middle by two black lines, those of the primaries widely and those of the secondaries slightly divergent towards the costa; the inner line less distinct than the outer, and elbowed towards costa of primaries; outer line sinuated; a submarginal sinuated white line most distinct on the secondaries; a marginal series of black spots between the nervures connected by a very slender black marginal line; central area of primaries densely irrorated with black scales; under surface sericeous greyish white, speckled with grey; a dot at the end of each discoidal cell, and a discal series black; a marginal series of blackish lunate spots: primaries with a nebulous greyish discal belt; costa slightly tinted with buff; apex white; expanse of wings, 1 inch 9 lines.

Yokohama (*H. Pryer*).

101. *Boarmia nikkonis*, n. s.

Allied to *B. roboraria* and *consortaria*, but whiter, the wings being pale silvery grey, crossed by numerous snow-white undulated stripes and short striæ, and crossed by two dentate-sinuate black-dotted dark grey lines, nearly as in *B. roboraria*, but the outer line of the secondaries rather deeply sinuated beyond the cell; the marginal black dots, and those bounded by the undulated discal stripe, smaller and blacker, but the black disco-cellular lunule, and the two short liturræ opposite to it upon the inner margin of the primaries in *B. roboraria*, obsolete in this species; the three usual black costal spots well defined; under surface quite unlike the European species;

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the primaries washed with smoky grey, darkest upon the costal border; costal black spots as above; a blackish spot at the end of the cell; four indistinct curved and slightly undulated discal grey lines in pairs; a marginal series of small black dots; fringe white, creamy towards the base, and traversed by a central grey stripe; secondaries paler than the primaries, no black costal spots, but otherwise with similar markings; body smoky brown; expanse of wings, 2 inches.

Nikko (*Maries*).

102. *Boarmia mœsta*, n. s.

Allied to *B. rosaria* of China and *B. conferenda*; grey; the wings crossed by five nearly equidistant irregular dusky stripes, of which the second, fourth, and fifth are edged externally with white; the second stripe is double, the third (which commences with an annular reniform spot upon the primaries) is rather acutely angulated just below the first median branch of these wings, the fourth is sinuated and less irregular, and the fifth (which is very broad upon the secondaries) is bounded externally by a regularly zigzag white stripe; a marginal series of dusky spots; under surface pale, sericeous; wings with dusky disco-cellular dots, and beyond the cell an indistinct dusky line, followed by a similarly coloured diffused discal belt; expanse of wings, 1 inch 9 lines.

Yokohama (*H. Pryer*).

103. *Boarmia definita*, n. s.

Above brownish white, speckled with blackish; wings with black marginal spots; primaries with a distinct central white belt, very broad above the middle of the wing, but rapidly narrowing below the median vein, and filled in with black towards the inner margin, bounded internally by an angular black line and externally by an oblique dentate-sinuate black line, which is inarched above the third median branch; a black disco-cellular spot; faint traces of a dusky submarginal line; secondaries with a dusky streak from the abdominal margin to the end of the cell, where there is a black dot; a black arched dentate-sinuate line beyond the middle, followed by a dusky arched submarginal stripe; body browner than the wings; under surface of wings creamy

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white, with conspicuous grey disco-cellular spots and faint traces of a discal greyish line; body below pale sordid buff; expanse of wings, 1 inch 10 lines.

Tokei (*Fenton*).

Not nearly allied to any known species; perhaps nearer to *B. roboraria* than to anything else; in marking somewhat like *B. concursaria*.

104. *Boarmia picata*, n. s.

Allied to *B. grisea*,* but considerably larger, the colours grey, black, and white; the outer half of the central band of the primaries white, and the inner half black; the central band of the secondaries white, bounded internally by a straight black stripe, and externally by two angulated and slightly undulated black lines, the inner one of which is more slender and more sharply defined; the external area on all the wings is dove-grey, blotched with black and traversed by a black-bordered whitish zigzag line; body grey; abdomen barred with black; primaries below slaty grey towards the base, with a broad central white band enclosing a dark grey line along its outer edge; external area black, with a pale buff apical spot and a large white marginal spot across the second median interspace; costa with two or three pale buff spots; fringe pale creamy buff varied with grey; secondaries white, the lines bounding the central belt nearly as above; disco-cellular spot black instead of grey; a slightly angular submarginal grey band; a slender blackish marginal line; expanse of wings, 2 inches.

Tokei (*Fenton*).

The most beautiful *Boarmia* I have ever seen; it is also allied to the Indian *B. pleniferata*.

105. *Tephrosia exculta*, n. s.

Nearly allied to *T. punctulata*, but larger, shining creamy white; the abbreviated second line of the primaries only represented by a quadrate black costal spot, and all the lines beyond the cell slender and more oblique than in the European species; the lines of the secondaries, on the other hand, are far more distinct, and

* Ill. Typ. Lep. Het. iii. pl. xlix. fig. 2.

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are blackish and five in number, the first crossing the wing at basal third, and the others in pairs beyond the middle; there is also a jet-black slender undulated marginal line; thorax grey, crossed by two brown bands; abdomen brown, banded with black; under surface whity brown, shining, densely mottled with grey striations; black disco-cellular spots, and an arched discal series upon the veins; a slender black marginal line; expanse of wings, 1 inch 5 lines.

Yokohama (*H. Pryer*).

106. *Xandrames sericea*, n. s.

Intermediate in character between *X. dholaria* of Darjiling and *X. latiferaria* of China; fuliginous-brown, shining, with bright cupreous reflections; primaries with a diffused black spot in the cell; a broad oblique slightly angular white belt streaked with pale brown, and with blackish border beyond the middle from the subcostal vein to the lower half of the outer margin; secondaries with the external border white at the apex, diffused; wings below nearly as above, but rather paler, more cupreous, much more sericeous, the black markings obsolete, and the white belt of primaries less striated with brown; expanse of wings, 3 inches 5 lines.

Tokei (*Fenton*).

107. *Stenotrachelys cinerea*, n. s.

Smoky grey; wings above with ash-grey external areas, bounded internally by an irregularly dentate-sinuate olive-brown stripe; a second somewhat similar stripe (angulated on the primaries) before the middle of the wings, and between these two stripes a narrow dusky ill-defined streak enclosed between two ill-defined undulated whitish cinereous lines; basal area of primaries striated with brown, and crossed by an angulated olive-brown stripe; all the wings with marginal blackish spots, and sordid white fringe varied with brown; primaries below greyish brown, with slight bronzy reflections; the basal area mottled with whitish, but indistinctly; a whitish slightly angulated post-median band enclosing a dusky line; secondaries dull white, striated indistinctly with grey; costal border sordid; a



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spot at the end of the cell, and a line beyond it from costa to abdominal margin dusky; external area greyish brown, with bronzy reflections; fringe as above; body creamy white; expanse of wings, 1 inch 10 lines.

Tokei (*Fenton*).

108. *Bargosa rivulosa*, n. s.

Pale pinky brown; wings covered with fine transverse grey striæ; basal half crossed by two slightly undulated parallel olive-brown stripes, the inner one not extending into the secondaries, two sandy olivaceous discal stripes, the outer one diffused internally; an indistinct submarginal series of diffused sandy olivaceous spots (almost forming an external border in the secondaries); a marginal series of black dots; fringe olivaceous, with a cream-coloured basal line; antennæ with the main stem creamy, and the pectinations dark greyish olivaceous; palpi dark olivaceous; abdomen whitish at the sides; under surface pale flesh-coloured, indistinctly speckled with grey towards the external area; all the wings with a conspicuous black disco-cellular spot; a greyish line connecting those of the front and hind wings; an indistinct diffused brownish discal band; expanse of wings, 1 inch 10 lines.

Tokei (*Fenton*).

Allied to *B. fasciata*, Moore.

GEOMETRIDÆ.

109. *Comibæna vaga*, n. s.

Wings above apple-green, with snow-white costal border; a semicircular red-edged snow-white spot at external angle; fringe cream-coloured, traversed by a red stripe interrupted by white dots; a barely perceptible trace of a curved pale green line across the disc, but this can only be seen in certain lights; secondaries with a semicircular apical spot edged with red, and divided by red veins; fringe as in primaries; body probably green when fresh; white, touched here and there with green, in the type; antennæ pale brown; head yellowish; wings below sericeous snow-white, slightly tinted with green, and crossed by a central apple-green stripe;

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primaries washed in front with apple-green; body sordid white; expanse of wings, 1 inch 3 lines.

Tokei (*Fenton*).

Allied to *C. bajularia* and *C. neriaria*.

110. *Racheospila nympha*, n. s.

Allied to "*Eucrostis*" *perlepidaria* of Australia; wings above sea-green, rather bluer in the male than in the female; each wing with a silver-centred reddish disco-cellular spot edged with creamy white, and an irregular discal series of cream-coloured spots; the female with rosy edges to those of the secondaries, and with the commencement of a second series near the base of the primaries; a slender brown interrupted marginal line shot with plumbageous; fringe snow-white; thorax pale green; head and antennæ white, the pectinations of the latter slightly brown; abdomen pearly white; under surface silvery white; expanse of wings, male 10¾ lines, female 11½ lines.

♂, Tokei (*Fenton*); ♀, Yokohama (*H. Pryer*).

EPHYRIDÆ.

111. *Synegia esther*, n. s.

Nearly allied to *S. hadassa*, but differing in the much darker lines across the wings, in the outer line being expanded into a broad greyish belt from the third median branch to the inner margin of primaries, and in the presence of two diffused marginal spots on these wings, the first subapical, the second (which is larger, and extends inwards to the greyish belt) upon the second median interspace; the female differs from the male in its paler coloration, stramineous instead of ochreous, and in the narrow (instead of expanded) discal line; expanse of wings, male 1 inch 3 lines, female 1 inch 4 lines.

Yokohama (*H. Pryer*); ♀, Tokei (*Fenton*).

The male, sent in a former collection by Mr. Pryer, I at first considered to be a variety of *S. hadassa*; but I had then seen only two typical examples of that species (like the female figured by me), and a specimen which I believed to be a pale male. I have since then had an opportunity of examining a good series taken at Tokei,

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and have found both sexes of each form: *S. esther* bears the same relation to *S. hadassa* that *S. imitaria* does to *S. botydaria*.

112. *Synegia inconspicua*, n. s.

*Anisodes hadassa*, ♂, Butler, Ann. & Mag. Nat. Hist. ser. 5, vol. i., p. 400 (1878).

Differs from *S. hadassa* in the pale rust-reddish markings on the wings, which in *S. hadassa* are greyish brown, the mottling of the wings is also much finer; expanse of wings, 1 inch 1—6 lines.

Yokohama (*Jonas*); Tokei (*Fenton*).

This species has altogether a yellower aspect than *S. hadassa*, which is a distinctly paler insect altogether, although with much more conspicuous pattern.

113. *Synegia? fentoni*, n. s.

♂. Aspect of the preceding species, but showing no trace of the plumbageous coloration upon the costal border of the primaries, common to all the other recognised species; upper surface clear bright ochreous, wings sericeous, crossed by two slender slightly sinuous (but not undulated or crinkled) brownish lines, the inner one of the secondaries obsolete, and the outer one darker and browner than on the primaries; an ill-defined submarginal series of squamose brownish spots, very indistinct upon the secondaries; a blackish dot at the end of each discoidal cell; costal area of secondaries whitish; under surface sandy ochraceous, markings very indistinct; expanse of wings, 1 inch 5 lines.

♀. Whity brown, speckled with dull ferruginous and smoky brown, markings smoky brown; otherwise as in the male; expanse of wings, 1 inch 6 lines.

Tokei (*Fenton*).

The pattern of this species is somewhat aberrant for a *Synegia*; but I have hitherto not detected any structural difference to warrant its separation from that genus.

ACIDALIIDÆ.

114. *Somatina simplicior*, n. s.

♂. Allied to *S. anthophilata*; sericeous creamy white, sparsely speckled with brown; primaries crossed before the middle by a slender sinuous brown line, incurved at

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costa, and uniting with a blackish costal spot; a second similar, but more angulated line, commencing and terminating in a blackish spot, limiting the external area; the blackish spot near external angle large and streaked with pearly grey; external area, excepting towards the costa and fringe, pale rosy brown; a fine blackish marginal line; secondaries whiter than the primaries; an angulated blackish line beyond the middle, and a fine marginal line; under surface silvery white, the fringe and the costal border of primaries creamy yellowish; discoidal area of primaries slightly grey; all the wings with disco-cellular dots, a slender arched slightly undulated discal line, and a fine marginal line blackish; expanse of wings, 1 inch 3 lines.

Tokei (*Fenton*).

115. *Asthena sancta*, n. s.

Snow-white, sericeous, minutely and sparsely irrorated with black scales; minute black disco-cellular points; four pale testaceous undulated and sinuated stripes between the basal third and the outer margin; wings below with minute apical marginal dots between the veins; black disco-cellular dots as above; a brownish discal line, dentate-sinuate in the primaries, but irregularly zigzag or castellated in the secondaries; primaries with a similarly coloured streak across the end of the cell, and the base of the costal border brownish; legs, pectus, and under surface of antennæ sordid; expanse of wings, 1 inch 2 lines.

Tokei (*Fenton*).

Allied to "*Acidalia*" *subpunctaria*.

MICRONIIDÆ.

116. *Myrteta angelica*, n. s.

Snow-white, sericeous; primaries crossed by three black stripes, the first two parallel and oblique, the third much more transverse, beyond the middle of the wing; external area finely striated with black, forming in the female an abbreviated streak near the external angle; a very indistinct yellowish stripe from the third median branch to the external angle; a slender black marginal line; secondaries crossed by two abbreviated oblique subparallel golden testaceous lines, spotted with

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black, the inner line extending to the subcostal vein, the outer one to the third median branch; a large subanal discal golden nebula bounded externally by two submarginal black spots; a slender golden marginal line; front of head and antennæ dark brown; under surface sericeous, snow-white; wings with a black marginal line; primaries with the apical area, excepting a spot at apex, pale greyish brown; the stripes of the upper surface indistinctly visible through the wing; secondaries with an interrupted submarginal greyish streak; expanse of wings, male 1 inch 7 lines, female 1 inch 9 lines.

♂, Nikko (*Maries*); ♀, Yokohama (*H. Pryer*).

Nearly allied to the Indian *M. planaria*, but in coloration much more like *Erosia himala*.

For convenience sake I still retain the *Erosiidæ* among the Geometrites.

EROSIIDÆ.

117. *Erosia cretacea*, n. s.

Chalky white; wings slightly sericeous, crossed by a pale testaceous angulated discal band, partly edged on both sides with black, ill-defined excepting for its black external edge towards the costa of primaries; beyond this band a much interrupted and ill-defined streak of the same colour, most distinct upon the secondaries; basal half of primaries irrorated with testaceous, a rather darker angular line towards the base; a submarginal blackish-speckled testaceous streak on the apical half; secondaries crossed near the base by a slender blackish line, and just beyond by blackish and testaceous scales in three ill-defined series; two black dots at the end of the cell; a submarginal abbreviated black line between the tails, and a testaceous spot enclosing a black dot above the inferior tail; abdomen indistinctly barred with grey; under surface white, primaries and legs sordid; antennæ below ferruginous; expanse of wings, 1 inch 1½ line.

Tokei (*Fenton*).

118. *Erosia plagifera*, n. s.

Upper surface white; primaries with greyish basicostal area; a rather broad dark grey central band, edged and striated with black, notched in front, inter-

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rupted by the median branches, which are broadly white, enclosing a large rounded black spot at the end of the cell, and a small ferruginous spot at its outer edge near the costa; disc striated with grey; a submarginal abbreviated grey bar, edged externally with four unequal rounded black spots opposite to the centre of the outer margin; a blackish marginal line; fringe spotted with blackish; secondaries crossed by two angulated tricoloured lines of black, white, and dull testaceous; two black spots near the base, and two larger spots just beyond the cell; a broad increasing streak of plumbageous grey from the base below the cell to the outer margin; a testaceous spot marked with black just above the middle of the disc; a testaceous marginal stripe, edged internally with black between the tails; fringe streaked with black; antennæ testaceous below; abdomen brown, banded with white; under surface white, primaries and legs brownish, all the wings with black discocellulars and black-spotted fringe; expanse of wings, 9 lines.

Yokohama (*H. Pryer*).

119. *Erosia schidacina*, n. s.

Structure of *Erosia*, but general coloration and pattern of *Schidax squammaria*; primaries above silvery grey; costal margin speckled with black; a falciform black line, edged externally with testaceous, across the disc, its lower third enclosed by a black patch at external angle, which also encloses two plumbageous spots; external border narrowly golden testaceous, bounded internally by a series of black dots; fringe black, with a slender silvery basal line; secondaries golden, transversely striped with black, most densely in a subbasal belt, which does not, however, cross the lower half of the cell; a tricoloured angulated discal stripe of black, yellow, and brown, followed immediately by a plumbageous stripe, which widens into a band below the third median branch; base silvery; subapical area blackish brown; external border and fringe as in primaries; under surface pale greyish brown, flecked with black; expanse of wings, 1 inch.

Tokei (*Fenton*); Hakodaté (*Whiteley*).

The example obtained by Mr. Whiteley, having been

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for many years incorporated with the general collection and placed near to the species of *Schidax*, has hitherto been overlooked.

120. *Erosia styx*, n. s.

Dull smoky black; primaries with a pale (sometimes dull white) transverse band beyond the middle, bounded externally by a zigzag velvet-black band, edged externally by a plumbageous line; basal and external areas sparsely sprinkled with grey dots; centre of costal border spotted with white; a discal series of velvet-black spots, the fifth from the costa white-bordered externally; a marginal series of black spots edged with greyish white; a pale marginal line; fringe white, with a black basal line; secondaries with a pale angulated central belt (sometimes dull white) edged with black and plumbageous grey; external border brown; a black dot above the lower tail; upper tail aborted; a white marginal line; fringe white, with a black basal line; antennæ and vertex of head white, dotted with brown; under surface smoky black, sericeous; wings with dusky disco-cellular spots and angulated post-median line, margin and fringe nearly as above; secondaries sometimes with dull white basal half; expanse of wings 10½—11½ lines.

Yokohama (*H. Pryer*).

CABERIDÆ.

121. *Cabera magna*, n. s.

Pearly white; wings crossed from basal third by three nearly equidistant scarcely visible chain-like greyish bands; primaries with a black dot at the end of the cell, and two or three along the apical margin; head and extremity of abdomen slightly yellowish (possibly stained); wings below pearly white, without markings; costa of primaries and body below creamy; expanse of wings, 1 inch 11 lines.

Tokei (*Fenton*).

The largest *Cabera* known to me.

PSEUDOSTEGANIA, n. g.

Allied to *Stegania*, from which it differs in its relatively larger primaries, and in the subcostal branches of

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the secondaries forking from a long foot-stalk; in appearance it is intermediate between *Acidalia* and *Melanippe*. Type, *P chrysidia*.

122 *Pseudostegania chrysidia*, n. s.

Pale golden stramineous, with pearly reflections; wings above with a conspicuous black dot at the end of the cell; primaries with the base of costal border striped with purplish brown; two slender subbasal brown lines; three angulated and zigzag subparallel lines just beyond the cell; two submarginal parallel undulated greyish brown lines, and a spot of the same colour at apex; secondaries crossed by three nearly equidistant grey-brown lines; two or three marginal dots of the same colour; under surface nearly as above; expanse of wings, 1 inch 2 lines.

Tokei (*Fenton*).

The following species should probably be placed (with its allies) near to *Timandra*; but, as this suggestion has only just appeared in print, I have left it where it would be looked for by Lepidopterists seeking to identify their species, namely, in its old position in the family—

MACARIIDÆ.

123. *Parasemia pryeri*, n. s.

Near to *P. notata* of Europe, with which it has long been confounded, but uniformly larger, the first two lines across the primaries commencing in well-marked oblique brown dashes, the third or discal line distinctly double throughout, the subapical costal brown patch which almost touches it in *P. notata* being replaced by two obliquely-placed brown dots nearer to the apex; the second line of the secondaries sharply defined, angular, not double, but a third greyish line parallel to the second limiting the external border; on the under surface the markings are sharply defined, the lines being (as in *P. notata*) of a golden testaceous colour, but those of the secondaries three in number and nearly equidistant, as on the upper surface; expanse of wings, 1 inch 6 lines.

Hakodaté (*Whitely*); Nikko (*Maries*); Tokei (*Fenton*); Yokohama (*Jonas*).



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At first sight this species is extremely like *P. notata* (the "*Macaria*" *notata* of European collections), but a comparison of the under surface of the secondaries would convince the most sceptical that they were perfectly distinct.

FIDONIIDÆ.

124. *Numeria japonica*, n. s.

Nearly allied to *N. pulveraria*, but the primaries with the centre of the belt of the same colour as the rest of the wing, and the inner stripe of the belt sinuous instead of straight; the secondaries nearly as dark as the primaries; under surface with the stripes across the wings better defined; expanse of wings, 1 inch 3—4 lines.

Tokei (*Fenton*).

125. *Cleogene sordida*, n. s.

Nearest to *C. lutearia*, but the primaries pale greyish brown, mottled all over with sandy brown, and with sandy yellowish reflections*; basal line of fringe whitish; body grey; margins of head, collar, tegulæ, and segments of abdomen whitish; wings below golden brown; body white below, the head and collar sordid; expanse of wings, 1 inch 2 lines.

Tokei (*Fenton*).

*C. peletieraria* seems to me to come nearer to *Scoria* than to *C. lutearia*; the upward curve of the costal margin of primaries beyond the discoidal cell is characteristic, although more apparent than real; this seeming flexion of the margin is due to the greater length of the costal border in the two species, *C. peletieraria* and *Scoria dealbata*; in other respects the two genera *Cleogene* and *Scoria* seem to be identical.

126. *Osicerda paupera*, n. s.

Cinereous; wings sericeous; primaries with two subquadrate black costal spots, one before and one beyond the middle; antennæ white; head and collar pale ochreous; under surface of body grey, the front of pectus,

* The general tint is pale sandy brown, when seen without a lens.

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palpi, and coxæ clay-coloured; wings grey, washed with pale rosy cupreous; apical area of primaries ochraceous; expanse of wings, 1 inch.

Tokei (*Fenton*).

Nearest to *O. costimaculata*, Moore, from Darjiling.

127. *Nadagara* flaviceps*, n. s.

Pale glossy pinky brown, mottled all over with small greyish dashes; primaries above with a small linear black disco-cellular dot; secondaries crossed just before the middle by a straight grey line; head, palpi, and collar bright yellow; under surface more pearly than the upper, the grey mottling darker, but the line across the secondaries very indistinct; discoidal area of primaries and basal half of costal border ochraceous; front of pectus yellowish; expanse of wings, 1 inch 3 lines.

Tokei (*Fenton*).

ZERENIDÆ.

METABRAXAS, n. g.

Intermediate in appearance between *Abraxas* and *Icterodes*, but the primaries rather more elongated than in either; the antennæ of the males as broad as in *Icterodes*, but fringed with small pencils of hair instead of pectinated. Type *M. clerica*.

128. *Metabraxas clerica*, n. s.

Allied to "*Abraxas*" *elegans* and "*Abraxas*" *giraffata*; wings above snow-white, spotted with smoky grey, the spots having darker centres; arrangement of spots nearly as in *Icterodes fraterna*,† but the disco-cellular spot of the primaries free, as in *I. jaguaria*, and the two subbasal series of spots well separated; the base of the primaries rather broadly ochreous; the spots on the external area for the most part confluent, so as to form almost a complete external border, those of the secondaries less perfectly confluent, arranged in three alternating series; body pale buff, with two longitudinal series of black spots;

* Although placed here by Walker, the genus *Nadagara* seems to me to be more nearly allied to *Apicia* and *Gynopteryx* than to any genus of *Fidoniidæ*.

† Ill. Typ. Lep. Het. ii. pl. xxxvii. fig. 9.

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the prothorax bright ochreous; wings below nearly as above, but the grey markings more completely confluent and unicolorous; the base of primaries not ochreous; body cream-coloured, front of pectus ochreous; first two pairs of legs broadly banded above with smoky grey; expanse of wings—male 2 inches 6 lines, female 2 inches 5 lines.

Tokei (*Fenton*).

129. *Callabraxas propinqua*, n. s.

Allied to *C. placida*,* but decidedly larger, with complete double submarginal series of large spots round the outer borders of the wings; primaries with three complete basal series of spots; the yellow border confined to the fringe of the wings; expanse of wings—male 1 inch 8 lines, female 1 inch 9 lines.

Tokei (*Fenton*).

130. *Callabraxas evanescens*, n. s.

Also allied to *C. placida*, but the central band of primaries not interrupted externally, only represented internally by two unequal costal spots and the discocellular spot; on the secondaries the band is represented by a single interrupted series of large grey spots; external border quite different, with two submarginal series of grey spots, the inner series interrupted on all the radial interspaces; a dark grey marginal line; fringe white; no yellow on the border; expanse of wings, 1 inch 9 lines.

Female. Tokei (*Fenton*).

This seems to be a very well-marked species.

LARENTIIDÆ.

131. *Oporabia nexifasciata*, n. s.

Allied to *O. neglectaria* of Stephens†; differs from it and from *O. dilutata* in its more uniform coloration, the primaries above with two distinct slender subbasal bands, the third band (which is the second in *O. dilutata*) double,

* *Abraxas placida*, Ill. Typ. Lep. Het. iii. pl. liii. fig. 1.

† Supposed by that author to be possibly a variety of *O. dilutata*.

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only separating into a fork towards the costa, fourth band tapering towards the inner margin, fifth or submarginal band nearer to the margin than in *O. dilutata*, and only well defined towards the costa; secondaries uniformly pale silvery grey; under surface whity brown, markings ill-defined, disco-cellular spots small but distinct; secondaries with a fairly well-marked arched dusky stripe beyond the middle, and a very faint submarginal stripe; expanse of wings, 1 inch 6 lines.

Tokei (*Fenton*).

132. *Collix minuta*, n. s.

Above pale shining greyish brown; wings with blackish disco-cellular spots; external third dusky and crossed by an arched and slightly undulated band rather paler than the ground colour, and enclosing a dusky line, and by a submarginal pale undulated line becoming zigzag towards the costa of primaries; a series of blackish marginal dots; primaries below metallic golden ochreous, streaked and banded with silver and black as follows: apical area black, crossed by two arched silver bands; a discoidal silver stripe interrupted by a black disco-cellular spot; two abbreviated black-tipped silver streaks from the outer margin, and an interno-median silver streak spotted with blackish from base to outer margin; secondaries silvery white, with golden ochreous costal area; a costal spot, a large disco-cellular spot, a straight discal band, and an external border blackish; body silvery; expanse of wings, 10 lines.

Yokohama (*H. Pryer*).

The species which I described as *Collix vashti* should have been referred to *Scotosia*.

133. *Lobophora muscigera*, n. s.

♀. In size rather larger than *L. lobulata*, in pattern more like *L. viretata*; primaries dull sap-green, crossed by undulated white lines, excepting upon the central belt, which encloses an irregular black-edged white and ferruginous band, and is crossed by black, or partly black, nervures; discal band represented by three ferruginous spots, and a black dash on each of the nervures; basal area pale brown, bounded by an irregular series of black dots; costal margin and fringe dotted with black;

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secondaries pale sericeous brownish grey; body brownish; palpi white, streaked with black; antennæ white at base; under surface shining greyish brown, with indications of an angulated post-median and a slightly undulated submarginal slightly darker band; disco-cellular veinlets black; legs blackish, spotted or banded with white; expanse of wings, 1 inch 5 lines.

Yokohama (*H. Pryer*).

134. *Melanthia yokohamæ*, n. s.

Creamy white; base of primaries olive-brown, crossed by an irregular greyish brown band with black-edged whitish margins; an irregularly zigzag band just beyond the middle outlined in black, filled in towards the costa with grey, its outer edge dotted with black upon the nervures and followed by two parallel greyish brown lines which form the internal boundary of the external area, the latter filled in by two bands, the inner one narrower than the outer, olive-brown to the upper radial vein, and then changing to very pale grey, the outer band grey, blotched with dull brown, not extending to the costa, divided from the brown band by a zigzag black line; a marginal series of black lituræ; fringe grey tipped with white, wholly white at apex; secondaries sordid towards the outer margin, a marginal series of very slender black lituræ; a double grey undulated submarginal line; a black dot at centre of abdominal margin, and an abbreviated zigzag black line half-way between the latter and the anal angle; thorax dark brown; abdomen with six dorsal brownish spots in pairs; under surface of wings sericeous pale brown, with black disco-cellular spots and undulated post-median line; a double grey submarginal stripe; primaries with a diffused grey patch in the cell; body below pale sandy brown; expanse of wings, 1 inch 2 lines.

Yokohama (*H. Pryer*).

Allied to *M. ruficillata* of Europe.

135. *Coremia fulvida*, n. s.

General aspect of *C. ferrugata* of Europe, excepting that the base of primaries is broadly blackish, with a whitish external edge; a subbasal band of grey varied

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with ochreous, followed by a slightly irregular white-edged central belt, which is dark fuliginous-grey internally, but cinereous externally; the undulations of the white external edge of the central belt dotted internally with black; a black disco-cellular dot; costa within the band black varied with grey; an undulated ochreous stripe immediately beyond the central belt, partly interrupted above the middle by an irregular abbreviated transverse blackish stripe, and at the first median branch by a blackish spot; external border grey; fringe grey, traversed by a darker line, and tipped with white; secondaries silvery grey with sordid fringe; body above dark brown, a silvery white transverse line just behind the thorax; head and base of abdomen yellowish; wings below leaden grey; the disco-cellulars and an angulated discal series of spots blackish; a dusky subapical streak; body below brownish; legs blackish above, the tarsi with whitish bands; expanse of wings, 1 inch 1 line.

Yokohama (*H. Pryer*).

Nearest to the South African "*Cidaria*" *scotosiata* of Walker.

136. *Scotosia ignobilis*, n. s.

Most like "*Phibalapteryx*" *floridata* from East Florida; dark smoky grey; primaries irrorated with cinereous at the base, crossed near the base by a slightly sinuous blackish line; central belt of the same form as in *Cidaria picata*, slightly darker than the ground colour, edged with black, and traversed by two blackish lines; a black disco-cellular dot; external border dusky, traversed by a squamose undulated cinereous submarginal stripe; fringe with a whitish basal line; secondaries crossed by numerous parallel dusky lines, three across the centre of the wing rather better defined than the others, the third being partly black; fringe whitish; under surface whitish; disco-cellular spots black, followed by four dusky angulated lines, the third of which is blackish; external border broadly grey; legs above black, barred with white; body and legs below sandy whitish; expanse of wings, 1 inch 5 lines.

Yokohama (*H. Pryer*).

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137. *Cidaria minna*, n. s.

Primaries above silvery white, crossed by numerous dull bronze-brown undulated lines; base and a broad central irregular belt dark bronze-brown, three black undulated lines upon the belt, the inner one running to the disco-cellulars, which are also black; a black costal spot between the basal patch and the central belt, and two white costal dots upon the belt; a submarginal interrupted arched series of blackish spots and a marginal series of smaller spots; fringe spotted with black; secondaries pale grey, with three parallel abbreviated white discal lines from the abdominal margin; fringe white, rather yellowish at base, and traversed by a grey line; head and thorax black-brown; abdomen grey; a large testaceous anal tuft in the male; primaries below leaden grey, crossed beyond the middle by a zigzag angular white line bounding the external area, the latter sprinkled with whitish scales, and crossed by pale buff veins, between which is a submarginal series of white spots; costal area sprinkled with white scales, the border crossed near the base by two blackish spots, and beyond the middle by three buff spots; fringe golden yellow tipped with white, and traversed by a greyish line; secondaries white, irrorated with grey; disco-cellulars black; a dusky zigzag post-median line, followed by two indistinct parallel lines; a submarginal series of grey and white spots; fringe as in primaries; body below greyish; expanse of wings, 1 inch 2 lines.

Male, Tokei (*Fenton*); female, Yokohama (*H. Pryer*).

The males obtained by Mr. Fenton are in poor condition.

138. *Cidaria mariesii*, n. s.

Primaries above with the basal two-thirds dark smoky grey, with undulated outer edge; two subbasal black lines, followed by an angular white-edged grey band; two pale-edged reversed undulated black central lines slightly diverging towards the costa; external area creamy, traversed by white undulated lines, crossed by yellowish veins, and faintly striped with grey internally between the white lines; two subcostal black spots; a semicircular marginal blackish spot and a second smaller spot confluent with and above it towards the apex; sometimes a third spot near external angle; fringe yellowish

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at base, tipped with white, and traversed by a grey line; secondaries sordid white, traversed by parallel pale grey lines, which change to black below the middle of the abdominal margin; external border greyish; fringe as in primaries; thorax whitish, tegulæ blackish, vertex of head slightly yellowish; abdomen dark reddish brown, with whitish edges to the segments; under surface sericeous-white, traversed from the middle by ill-defined parallel greyish lines; disco-cellular spots and a slender marginal line black; fringe creamy yellowish at base, and traversed by a grey line; body below yellowish; expanse of wings, 1 inch 2 lines.

Nikko (*Maries*); Tokei (*Fenton*).

Nearest to *C. dimidiaria*, Motschulsky.

139. *Cidaria pryeri*, n. s.

Near to *C. substituta*; also very near to the preceding species, from which it differs as follows: primaries with the basal two-thirds slaty grey, the black lines across it more numerous; the margins of the subbasal band yellow; the external area yellow, a grey line just beyond the central belt (which forms part of the basal two-thirds of the wing); an angular discal series of black lunate spots just beyond and parallel to the grey line, the largest spots being towards the costa, where they lose their lunate character and become oblong; subapical costal area blackish; three submarginal black spots towards apex, and one blackish spot near the external angle; secondaries with the basal two-thirds greyish, particularly towards the abdominal margin; body yellower than in *C. mariesii*; under surface of wings with the basal two-thirds grey, bounded externally by an angular blackish line; a discal series of dusky spots; costa and body below yellowish; expanse of wings, 1 inch 4 lines.

Yokohama (*H. Pryer*); Tokei (*Fenton*).

The example from Tokei is much worn, and therefore more nearly resembles *C. mariesii* than the type does.

140. *Cidaria? anomala*, n. s.

General coloration of *Scotosia*; primaries above dark smoky brown, sprinkled with a few whity brown striations; a pale oblique elbowed line across the basal third,



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external fourth brassy yellow, speckled with black, and interrupted by a large quadrate costal patch, and an angulated discal patch across the median branches, the centre of the external area deeply sinuated internally; fringe pale buff, spotted with black; secondaries smoky grey, with paler striations scattered here and there all over the surface, those nearest the external border pale yellow; two slender irregular pale yellow discal lines; fringe pale buff, spotted with black, the spots connected by a grey line; thorax smoky brown; abdomen smoky grey, with whitish edges to the segments; primaries below grey, otherwise nearly as above; secondaries grey, mottled with creamy white, which merges into buff towards the external margin; this mottling is confluent towards the base and across the disc so as to give the appearance of an angular central belt; veins barred with black; a black spot on the disco-cellulars; fringe buff, spotted with black; body below buff, mottled with greyish brown; expanse of wings, 1 inch 9 lines.

Tokei (*Fenton*).

This seems to be a tolerably common species.

141. *Thera granitalis*, n. s.

Primaries above white, densely speckled all over with olive-brown, crossed at basal third by an oblique irregular white line, which unites, at its inferior extremity, with the inner edge of the central belt; the latter black-brown, of the usual irregular form, but divided by the union of its white borders in the centre of the interno-median interspace; a sinuated white discal line and a marginal series of white lunules; an oblique apical cream-coloured dash; fringe cream-coloured, spotted with dark brown; secondaries greyish white; a dusky marginal line; body blackish, varied with grey and white; under surface sericeous-white; markings indistinct; secondaries with dusky disco-cellular spot and slender angular post-median line; a pale greyish discal line; expanse of wings, 1 inch 6 lines.

Yokohama (*H. Pryer*); Tokei (*Fenton*).

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XXVII. *Descriptions of new* Longicorn Coleoptera *from India, Japan, and Africa.* By CHARLES O. WATERHOUSE.

[Read August 3rd, 1881.]

SOME collections recently received have furnished many interesting novelties among the Longicorn Coleoptera. I give here descriptions of a few of them. Among the *Prionidæ* is a new *Cacoscelis*, which I propose to call *C. latus* on account of its being one-third broader than either of the known species. The second is a *Macrotoma*, remarkable among its brown or black congeners by having metallic-green elytra. Among the *Cerambycidæ* is one most remarkable new genus, apparently allied to *Megacœlus*, with short strongly dentate (almost pectinate) antennæ, and with the apical segments contracted, excavated in the middle, and laminated at the sides of the excavation. Mr. Bates has two examples from West Africa, and there is a single specimen of an allied species from S.E. Africa in the British Museum: all three females. The general appearance of the insect reminds one of the genus *Eletica* among the *Cantharidæ*.

Among the *Lamiidæ* is an interesting new species of *Echthistatus* from Japan, being the second species received from that country; and a very fine *Monochamus* allied to our European *M. sartor*, but very distinct; the antennæ of one of the examples measure 4⅔ inches in length.

## PRIONIDÆ.

*Cacoscelis? latus*, n. s.

Piceus, subtus nigro-piceus, latus, depressus; capite ruguloso, thorace fortiter rugoso, lateribus impressis post-medium emarginatis, elytris opacis, confertim subtiliter punctatis et rugulosis. ♀. Long. 24 lin., lat. 9 lin.

Much broader and more depressed than *C. œdipus*, White. The head is not narrowed behind the eyes, which are in consequence not prominent; all the surface



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is rugulose and finely punctured, but shining. The antennæ are relatively broader than in *C. œdipus*, with the fourth to tenth joints with their apical angle more prominent, sparingly punctured. The very transverse shining thorax has the surface almost plicate, with the raised parts finely and sparingly punctured; there is an impression in the middle; the sides are much depressed, slightly curved from the anterior angles to the acute lateral tooth made by the posterior emargination; this tooth is directed backwards; midway between this tooth and the anterior angle there is a very slight projection; between the lateral tooth and the base there is an obtuse projection nearly similar to that in *C. œdipus*. The scutellum is very broad, sparingly punctured. The very broad flattened elytra are arcuately narrowed at the apex, and separately rounded, the sutural angle obliterated; the sculpture is finely rugulose, mixed with fine punctuation; it is much finer at the apex than at the base, and the region of the shoulders is beset with minute tubercles. The prosternal process is rather flat, longitudinally impressed on each side; the mesosternum is broader than in *C. œdipus*, and is not deeply channelled.

*Hab.* Cape G. H., Namaqualand. B. M.

I have only seen two examples, both females, of this species, the property of the South African Museum. One of the specimens has now been presented to the British Museum. It seems not unlikely, from the form of the head and thorax, and the broad form and rough sculpture of the elytra, that this species may prove to be the type of a new genus when the male is known.

*Macrotoma æneipennis*, n. s.

Nigra, subopaca; capite parvo, thorace convexo, creberrime punctulato, antice parum angustato, supra maculis tribus nitidis impressis, lateribus fere rectis, dentibus minutis triangularibus instructis, angulis posticis spina acuta armatis, elytris æneis, nitidis, aureo vel cupreo parum tinctis, crebre punctatis, postice paulo angustatis, juxta scutellum gibbosis et tuberculis minutis instructis, pectore opaco creberrime punctato, metasterno plaga triangulari abdomineque nitidis parcius punctulatis, femoribus et tibiis anticis scabrosis, pedibus posteribus lævioribus. ♂. Long. 15½ lin.

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This species, by its green elytra, is at once distinguished from all its allies. It is nearest to *M. absurdum*, Newm. The head below has a ridge within each eye; these two ridges converge posteriorly. The prosternal process is narrow, convex and parallel. The third joint of the antennæ is concave above, and more strongly so below; the basal joint is concave below, both sparingly scabrous; the ninth, tenth, and eleventh joints are dull and longitudinally furrowed.

*Hab.* S.E. India. B. M.

CERAMBYCIDÆ.

PLECTOGASTER, n. g.

♀. Head not much narrowed behind the eyes, which are strongly emarginate. Antennæ short and thick; a little more removed from the eyes than in *Dorcasomus*; the first joint rather flattened, elongate-triangular; the second very small; the third to tenth with the inner apical angle strongly and acutely produced; the eleventh joint irregularly fusiform. Thorax impressed at the base, and strongly so before the front, constricted anteriorly, the front margin raised and produced over the back of the head; with four obtuse swellings on the back, a tubercle about the middle of the side, and with a lateral oblique ridge before the posterior angle and before the anterior angle. Elytra somewhat flattened dorsally, slightly narrowed towards the apex, which is obtuse; the shoulders are very obtuse; each elytron has three fine raised lines. The prosternal process is very narrow and arched. The mesosternum is moderately broad. The metasternum is very large, but not so long as broad. The first abdominal segment is very large, and as long as the metasternum; the second segment is nearly as long, fringed at the apex; the following segments are retracted, laminated, and densely pubescent. The femora are very compressed; the tarsi narrow.

I propose this genus for a most remarkable insect in Mr. H. W. Bates's collection from the Camaroons. Mr. Bates referred it to the genus *Megacœlus*, a genus which was only known to him from having seen it some years ago in this Museum collection. I think, however, that the structure of the antennæ and thorax are so different that it is desirable to separate it generically. The elevated and produced front margin of the thorax is

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a marked peculiarity; an approach to this is met with in *Sagridola* in the *Lepturinæ*.

The following is the description with which Mr. Bates has furnished me:—

"*Megacœlus pectinicornis*, n. s.

"Elongatus, niger, femoribus (basi exceptis) flavo-testaceis; capite exserto, angusto; palpis articulo terminali ovato, apice obtuso; antennis brevibus articulis 3—10 apice productis, breviter pectinatis; thorace elongato, antice angustato, supra inæquali bituberculato, polito, lateribus unispinosis; elytris oblongis, lateribus parallelis apice late rotundatis, supra basi politis, versus apicem crebre alveolato-punctatis, tricostatis; pedibus robustis, femoribus compressis, elongato-ovatis, tarsis latis, articulis 1—2 triangularibus, æqualibus.

"♀. Ventri segmentis 1—2 maxime elongatis, hoc apice ciliato, cæteris segmentis omnino retractis. Long. 1 in. 10 lin.

"I venture to refer this remarkable Longicorn to the genus *Megacœlus*, from the similar structure of its abdomen, and its evident affinity in other respects. It differs, however, in its pectiniform antennæ and anteriorly-narrowed and prolonged thorax. The anterior coxæ and prosternum are constructed as in *Dorcasomus*; the eyes are also similar; but the mandibles are long, robust, and falcate, and the palpi much longer, and the mesosternum is rather broader between the haunches. The antennæ are much shorter than in either sex of *D. Delegorguei*.

"*Hab.* Mount Cameroons, W. Africa; two examples." H. W. Bates.

I propose giving a figure of this species in part viii. of my 'Aid to the Identification of Insects.'

*Plectogaster thoracica*, n. s.

Nigra, sat nitida, tenuissime pilosa; thorace crebre punctato, tuberculis quatuor depressis nitidis, glabris, lateribus tuberculo parvo acuto instructis, elytris dense punctatis, nervis nonnullis nitidis. ♀. Long. 26 lin.

This species differs from *P. pectinicornis* in having the femora black; the head is densely and finely rugulose; the thorax is rather more produced over the head (the lateral tubercle is smaller), the whole surface is rather thickly punctured, somewhat strongly in front, more

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delicately behind; the elytra are thickly punctured at the base and apex, very densely and more finely punctured over the discal area; each elytron has three fine elevated lines besides an indistinct shorter one at the side.

*Hab.* Mamboio, Usagava Mountains. B. M.

The specimen from which I have taken the above description is in imperfect condition, and has lost its antennæ. It is a female, and the structure of the abdomen does not appear to differ materially from the species described by Mr. Bates. We shall look forward with much interest to the discovery of the males of these remarkable insects.

LAMIIDÆ.

*Echthistatus binodosus*, n. s.

Fuscus, dense fusco-pilosus; capite sat crebre punctato, pone oculos rugoso, thorace medio paulo dilatato ibique utrinque spina valida acuta armato, supra inæquali sicut trinodoso, elytris basi thorace latioribus medio parum ampliatis, apicem versus gradatim angustatis singulatim acute productis, basi utrinque noda rotundata nigra nitida notata, lateribus carina obtusa postice granulosa instructis. Long. 9 lin.

The surface of the thorax is uneven and rugulose, and on the disk three slight elevations may be traced. The elytra are very gently convex on the back, almost perpendicularly deflexed at the sides, the deflexed portion being surmounted by an obtuse carina which extends from the shoulder to the apex; there is a well-marked concavity above each shoulder, and near the scutellum there is a small, very prominent, round bladder-like tubercle. All the surface is studded with minute granules. The apices are divergent and acutely produced.

*Hab.* Tokei, Japan.

*Monochamus grandis*, n. s.

Niger; thorace confertim ruguloso, lateribus plaga flavo-tomentosa notatis, scutello flavo-tomentoso, elytris perparum æreo-tinctis, basi crebre granulosis, medio fascia irregulari obliqua et ante apicem plaga griseis et passim maculis parvis griseis vel flavidis ornatis. Long. 18—22 lin.

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Allied to and of nearly the same form as *M. sartor*, F. The thorax has the lateral spine smaller and more acute, and there is a somewhat distinct swelling at the posterior part of the disk. The elytra are rather longer, more impressed within the shoulders, and in the male are less narrowed posteriorly. The sculpture is altogether different. The head and thorax are sparingly clothed with yellowish pile, densely and finely rugose. The elytra have the basal sixth closely beset with minute shining granules; the rest of the surface is sparingly punctured, except at the side below the shoulders, where it is asperate-punctate; the whole clothed with the finest ashy pile. Some of the specimens have no markings, but usually, in the smaller examples, there is a whitish oblique, much interrupted fascia about the middle, and a patch at some distance from the apex; and at the suture, sides and apex there are numerous dots and spots of greyish or yellowish pile. The female has the markings much more distinct, and above each pale band there is some blackish pile. The antennæ are brown; in the male rather more scabrous than in *M. sartor* (measuring in a large example $4\frac{2}{3}$ inches), and in the female smooth and annulated with greyish.

*Hab.* Japan (*Maries*).

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## XXVIII. *On some new species of* Rhopalocera *from Southern Africa.* By Roland Trimen, F.L.S., &c., Curator of the South-African Museum, Cape Town.

[Read August 3rd, 1881.]

The butterflies here treated of are the following, viz.:—

| | |
|---|---|
| Acræa Barberi, | Crenis Morantii, |
| Acræa fenestrata, | Salamis nebulosa, |
| Leptoneura Oxylus, | Lycænesthes livida. |

All are natives of the extra-tropical region of Southern Africa, and only *Salamis nebulosa* appears to extend within tropical limits. I propose to give figures of these species, as well as of others which will form the subject of a further communication to the Society, in the work which I am preparing on the South-African *Rhopalocera* generally.

### NYMPHALIDÆ.

#### ACRÆINÆ.

#### Acræa, *Fab.*

*Acræa Barberi*, n. s.

Exp. al. 2 in. 5½—9½ lin. (male); 3 in. 2 lin. (female).

♂. Warm brick-red, tinged with carmine; spotted and edged with black. Fore wing:—base suffused with black, narrowly near costa, but more widely on inner margin; costa edged with fuscous very narrowly; from apex to posterior angle a broad hind-marginal fuscous border, containing seven large yellow-ochreous spots, of which the first is smallest, and the second not enclosed by fuscous on its inner edge; a large elongate spot closing discoidal cell; a similar marking in the cell not far from the extremity, and another (of variable size and rounded) in the cell near base; slightly beyond the last-named spot, and below median nervure, a curved elongate spot, and another (also below median nervure) between first and second median nervules; a spot below first median nervule, not far from posterior angle;



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beyond discoidal cell a subapical transverse black bar of five confluent spots, extending from costa to second median nervule, and slightly curving inwardly at its lower extremity; beyond this the ground colour is slightly tinged with yellow-ochreous. Hind wing:—Base rather widely suffused with black, a disco-cellular spot being partly confluent with the suffusion; a small spot surmounted by a thin short streak at extremity of discoidal cell; an irregular transverse discal row of seven rather small spots, of which the first and sixth are nearest base; on inner margin an eighth spot is indistinctly perceptible; a moderately broad interiorly-crenelated hind marginal black border, completely enclosing seven rather small yellow-ochreous spots. Cilia white, interrupted with fuscous at extremities of nervules. Under side:—Markings similar; but hind wing and small subapical space of fore wing pinkish white, and ground colour of fore wing pale salmon-pink. Fore wing:—Base slightly suffused with black below median nervure only; two very small black spots on costa at base, and a third (very small also) close to base in discoidal cell. Hind wing:—The basal black is a sharply-defined patch enclosing six white spots; an eighth and a ninth black spot continue the discal row to inner-marginal edge before middle; a regular row of seven or eight broad red lunulate marks interiorly bounding hind-marginal black border; also some red suffusion exteriorly bounding basal black; spots in hind-marginal border larger than on upper side, and conspicuously creamy white.

♀. Semitransparent in fore wing; ground colour very much duller and paler; basal black almost obsolete; all the blackish markings smaller and much fainter, especially the hind-marginal border of hind wing, which is all but obsolete. Under side:—Except in the transparency of the fore wing with its fainter spots and duller white of the hind wing, like that of male.

This *Acræa* stands between *A. Acara*, Hewitson, and *A. Chilo*, Godman (Proc. Zool. Soc. Lond., 1880, p. 184, pl. xix., figs. 4, 5), a native of Abyssinia. It differs from the former in its much less developed black markings (particularly the basal black of both wings, and the subapical bar and apical border of the fore wing), and in the apical yellow-ochreous of the fore wing being very much fainter. In the female these

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differences are as marked as in the male, but the former is also distinguished by the remarkable transparency of the fore wing. From *A. Chilo*, on the contrary, *A. Barberi* is in both sexes distinguishable by its stronger black markings (with the exception of the inner edge of the fuscous hind-marginal border of the fore wing in the male and of both wings in the female, which in *A. Chilo* is unbroken near apex of fore wing)), and in the female by the much less transparency of the fore wing. The under side markings and colouring of *A. Barberi* agree entirely with those of *A. Acara*, except that the former are smaller.

I have named this butterfly after its discoverer, Mr. H. Barber, who captured the two males and the female here described in the Transvaal country during the year 1873. Mr. Barber collected a number of species in that region, but did not note localities further than stating that all were taken to the North of Pretoria.

To this species, I consider, should be referred two butterflies received at the South-African Museum, *viz.*, a male taken on the Vaal River by Col. J. H. Bowker, and a female forwarded from some part of the Transvaal by Mr. D. Arnot. These examples are clearly referable to one and the same variation, both having the apical yellow-ochreous of fore wing more pronounced, while the interior fuscous edging of the hind marginal border is almost obsolete. In the male this last-named character extends in a less marked degree to the hind wing; while in the female the peculiar transparency is not noticeable, the wings being quite as opaque as in ordinary females of *A. Acara*.

*Acræa fenestrata*, n. s.

Exp. al. 2 in. 2 lin. (male).

♂. Warm fulvous-ochreous, inclining to rufous, with narrow black borders and a few black spots. Fore wing:—Base very narrowly marked with black, which extends for a little distance along inner margin; costa very thinly black-edged from near base, but more widely near apex; hind margin narrowly black-edged throughout, and all the nervules near it clearly defined with black—those near apex for the greatest length, and the submedian nervure least of all; basal area thinly irrorated with black; in discoidal cell near extremity a moderate-sized reniform spot; at extremity an elongate and more

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irregular marking of about the same size; a little beyond the cell, between subcostal nervure and third median nervule, an oblique row of three small rounded contiguous spots; immediately bounding the second and third spots of this row externally, two small elongate transparent markings with ill-defined edges; below the third spot of the row, and well separated from it, a very small rounded black spot, between third and second median nervules; a similar slightly larger spot between median and submedian nervures, on edge of basal irroration; and a third, larger and not so rounded, between first median nervule and submedian nervure beyond middle. Hind wing:—Base more widely marked with black than in fore wing; black spots very small and few in number, *viz.*, two in discoidal cell (that near base confounded with black suffusion); one on upper disco-cellular nervule; one above, and one below, cell; and five minute ones in a very irregular discal row about middle (interrupted widely about the branching of median nervure), of which only the first, fourth, and fifth are distinct; hind margin with a rather narrow, well-marked, unspotted black border. Under side:—Hind wing and apical area of fore wing, cream-colour dusted finely with grey. Fore wing:—A narrow edging of cream-colour along costa; spots as on upper side, with the addition of a black dot on costa at base; ground colour paler, more glossy, inclining to pink; apical and hind-marginal cream-colour crossed by conspicuous internervular orange rays, of which the longest is between subcostal nervure and upper radial; nervules and hind margins more finely and thinly defined with black than on upper side, particularly the latter. Hind wing:—Black spots better defined than on upper side, especially those of median transverse row, an additional one on costa near base; another on inner-margin near base; and two between submedian nervure and inner margin a little before termination of median row; a very thin hind-marginal black edging line preceded at a little distance by an equally thin festooned line; the space between these two lines is clear cream-colour, without irroration, but is crossed by the very fine black nervular lines; before the festooned line, a row of eight conspicuous cuneate orange markings of about equal size, the eighth interiorly becoming pink; other dispersed pink markings, irregular in form and size, before middle, *viz.*, one on

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costa at base; two above, one in, one at extremity, one beyond, and two below discoidal cell; and a long ray along inner margin.

This very distinct *Acræa* exhibits affinities with *A. Nohara*, Boisd., *A. Doubledayi*, Guér., and *A. Anacreon*, mihi; its upper surface colouring and markings resembling those of the first named; its markings generally that of the second; and its under surface colouring that of the third. From all three, and indeed from all the other *Acrææ* that I have examined, it may readily be recognised by the two peculiar diaphanous spots immediately following the costal transverse macular black bar beyond the middle of the fore wings. The singularly minute black spots of the hind wings are also a very marked character in *A. fenestrata*.

A single male of this butterfly was contained in the collection purchased by the South-African Museum in 1879 from Mr. T. Ayres. It is noted in Mr. Ayres's list as having been captured in the Leydenburg district of the Transvaal. There are two males in the Hewitson Collection of the British Museum labelled "Transvaal," and Mrs. Monteiro possesses another, taken at Delagoa Bay.

SATYRINÆ.

LEPTONEURA, *Wallgrn.*

*Leptoneura Oxylus*, n. s.

*Leptoneura Clytus* (Linn.), var. A, Trimen, Rhop. Afr. Aust., ii. p. 194 (1866).

Exp. al. 2 in. 7½—9⅓ lin.

♂. Brown, strongly glossed with a bronzy lustre of mingled reddish and greenish; fore wing with pale-creamy macular transverse submarginal stripes. Fore wing:—A transverse, exteriorly convex, interiorly strongly-dentate, pale-creamy macular stripe, from costa just beyond middle to anal angle; of this stripe the upper portion is rather narrow and uninterrupted, but the lower portion is broader and consists of three spots more or less completely separated from the upper portion and from each other; close to apex a short, much curved, unbroken, wider stripe of the same colour, from near costa to third median nervule—along which, by a very thin ray, it is united to the preceding stripe; touching inner edge of this short stripe are three rather

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small, more or less confluent, black ocelli with widely blue-clouded white pupils, bounded interiorly by a thin creamy-yellow line; along hind margin a rather narrow ill-defined whitish border, separated by a brown streak from apical pale-creamy stripe; and traversed longitudinally by another brown streak close to hind-marginal edge. Hind wing:—Beyond middle, between second subcostal nervule and submedian nervure, a curved transverse row of five conspicuous black ocelli, with bluish white pupils, in pale fulvous rings; of these ocelli the fifth is much smaller than the rest, and often bipupillate; a narrow hind-marginal border of a paler brown than the ground colour, traversed by a dark brown streak close to hind-marginal edge. Under side:—Rather paler, less glossy. Fore wing:—The creamy bands whiter—the inner one considerably narrowed, its upper portion more irregular, and sometimes even interrupted, its lower macular portion with the two lower spots very much reduced or obsolete; the inner edge of this stripe is defined by a dentate stria darker than the ground colour; in discoidal cell, a little beyond its middle, a slightly-angulated dark brown transverse stria, preceded by a shorter striate marking, sometimes broken into two small spots. Hind wing:—A very short dark stria (or two small spots) in discoidal cell near base; two irregular dark transverse striæ from costal to submedian nervure,—one before, the other about, middle,—of which the first is exteriorly edged with some indistinct whitish scales; outer stria much more irregular than the inner; ocelli as above, but their pupils smaller, their rings yellow, narrower, and enclosed in thin outer rings of dark brown,—and the black containing traces of a very thin bluish crescent; two additional, rather duller, but similar ocelli near costa, before the others; both interiorly and exteriorly the ocelli are bounded by some whitish or whitish violaceous clouding.

This fine form of *Leptoneura* seems to be sufficiently distinct from *L. Clytus*, Linn., to be ranked as a separate species. The female still remains unknown to me, but, considering how rarely that sex of *Clytus* proper is taken, in comparison with the very numerous males, this is perhaps not to be wondered at in the case of a form that appears to be very local. The male *L. Oxylus* differs from *L. Clytus* in the following respects,

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*viz.*:—(1) its much larger size, *Clytus* not expanding above 2½ inches, and being generally not more than 2 in. 4 lin. across the wings; (2) its paler colouring throughout; (3) the proportionally smaller and invariably triple ocellus of fore wing, which in *Clytus* is very rarely more than double, and, in the instances where it is triple, the lowest (or third) factor of the compound ocellus is small or minute; (4) the greater width of the creamy stripe beyond this ocellus; (5) the whitish hind marginal border of fore wing; (6) the more irregular and broken character of the macular creamy stripe across disc of fore wing; (7) the more distinct ocelli of hind wing, and their conspicuous pale fulvous (instead of dull fulvous) rings; (8) on the under side of the hind wing the ocelli are much blacker and their yellow rings much brighter; while (9) the two dark striæ are very much less irregular, the outer one projecting farthest from base on the radial nervure, so that the space between the striæ is widest at that point, instead of on the third median nervule; and (10) the whitish edging of the striæ is either wanting or very faintly present, and the basal broken stria of *Clytus* is all but obsolete. A structural difference is noticeable in the antennæ, which are proportionally shorter in *Oxylus*; they are also of a paler and more yellowish rufous.

Colonel Bowker sent this butterfly from Butterworth, Kaffraria Proper, as long ago as 1861, and afterwards from the Bashee River in the same Territory. Mr. W. S. M. D'Urban informed me that he had noticed this large "Variety A" of *L. Clytus* in the then Colony of British Kaffraria; but it was not until March, 1875, that Colonel Bowker succeeded in taking specimens on the west bank of the Kei River, in the Division of East London. I have not heard of the butterfly occurring in Natal, or elsewhere in South Africa than within the limited range indicated.

NYMPHALINÆ.

CRENIS, *Boisd.*

*Crenis Morantii*, n. s.

Exp. al. 2 in. 1 lin. (female).

♀. Dull ochreous-brown; the fore wing with a darker space and some pale dull yellow-ochreous marks. Fore wing:—A fuscous-brown space, near costa, about

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and beyond middle, forming an ill-defined cloud, commencing immediately beyond extremity of discoidal cell; this cloud encloses a yellow-ochreous spot a little beyond cell, and is bounded externally towards apex by an elongate paler spot close to costa, and between third and second median nervules by a smaller similar spot ill-defined outwardly; towards hind margin the ground colour is paler and very faintly tinged with yellow-ochreous (except near apex); a submarginal row of very indistinct internervular small fuscous-brown spots. Hind wing:—Very faintly tinged with yellow-ochreous about apex, near which are two faint fuscous-brown dots. Under side:—Hind wing and apical area of fore wing cream-colour, inclining to argillaceous. Fore wing:—Yellow-ochreous, becoming much paler beyond middle; fuscous-brown cloud very conspicuous, and the ochreous spot it encloses larger and better defined than on upper side; the two outer spots, on the contrary, much less distinct, and quite merged in the ground colour; costa from base narrowly bordered with dull cream-colour; submarginal row of seven small fuscous spots; a little before it, near costa, a curved row of three black dots; Hind wing:—three transverse thin brownish-rufous striæ, the first and second (respectively before and about middle) very irregular and interrupted, the third (near hind margin) regular and lunulated; between the second and third striæ a row of seven contiguous ocelli, centred with a black and yellow dot, and ringed with brownish rufous; of these the middle (fourth) one is smallest and more indistinct than the rest; a small brownish-rufous striola at extremity of discoidal cell; between it and the first ocellus some slight fuscous irroration.

This species is nearly allied to both *C. natalensis*, Boisd., and *C. madagascariensis*, Boisd. From the former it differs, on the upper side, in its very much darker colouring and exceedingly ill-defined marking, wanting alike the warm yellow-ochreous ground colour in both wings, and the black spots and lunules in the hind wings; while on the under side it is cream-colour, with rufous markings, instead of hoary, clouded with fuscous-grey and with fuscous markings; and the fore wing altogether wants the suffused spot near posterior angle, so conspicuous in *C. natalensis*.

From *C. madagascariensis* it diverges almost similarly, as regards the upper side, in its want of warm ochreous

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colouring; and its vague fuscous-brown space (enclosing an ochreous spot) is altogether different from the broad dark apical area, which, in *C. madagascariensis*, is only varied by the bar of three small indistinct ochreous spots from costa, not far from apex. On the under side, *C. Morantii* has none of the hoary colouring of the Malagasy species, and all its striæ and ocelli are much more distinct, besides being rufous instead of dull grey; while in the hind wing the central and submarginal striæ are more irregular and dentated.

The only example of this insect that I have met with is the female above described, which was taken at Pinetown (Natal) in April or May, 1869, by Mr. Walter Morant, an able observer and collector, after whom I have named the species. Mr. Morant wrote that the specimen in question settled on the trunks of trees, with closed wings, in the same manner as *C. natalensis*, and that he believed he had seen, if not taken, a male nearly resembling it.

SALAMIS, *Boisd.*

*Salamis nebulosa*, n. s.

Exp. al. 2 in. 6 lin. (male); 2 in, 9 lin.—3 in. 1 lin. (female).

♂. Iridescent whitish, with fuscous markings. Fore wing:—A well-defined pale bluish grey basal cloud reaching as far as middle of discoidal cell; upper discocellular nervule with a thin curved fuscous mark; apical area widely fuscous, from costa a little beyond end of cell to end of second median nervule on hind margin; inner edge of this apical patch irregularly excavated; near apex three white spots, of which the second (close to subapical projection) is divided by a transverse fuscous streak, and the third is indistinct; lower portion of hind-marginal fuscous narrowly continued to posterior angle by rather suffused hind-marginal and submarginal fuscous streaks; near the inner of these streaks, between second median nervule and submedian nervure, two fuscous spots, rather large, obliquely placed, and slightly suffused. Hind wing:—A basal grey suffusion, narrower and less distinct than in fore wing; immediately before hind margin a parallel fuscous streak; preceding which is a lunulate, suffused, fuscous streak, becoming irregular and less distinct in its lower portion, but with the outer streak enclosing six more or less ill-



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defined whitish marks; a little before apex, from costa to second subcostal nervule, a large elongate fuscous marking, leaving two white spots between it and the submarginal streak; immediately beneath and slightly beyond this marking an obscure fuscous red-centred pale yellow-ringed ocellus; below this some greyish irroration, extending to anal angle, but interrupted between second and first median nervule by a conspicuous red, blue-pupilled, black-clouded, yellow- and black-ringed ocellus; the trace of a faint grey line from costa, about middle, straight to before anal angle or inner margin, where it becomes darker but suffused. Under side:—Duller, iridescence much fainter, very thinly irrorated with fuscous, except about a central band; the fuscous markings only indicated by a greyer tint; near bases a common double transverse irregular stria (indistinct in hind wing) from costal nervure of fore wing to submedian nervure of hind wing; also a common fuscous streak from first median nervule of fore wing to inner margin near anal angle of hind wing. Fore wing:—A very short thin transverse stria in cell close to base; a double stria, closing cell, from costa to below first median nervule, where its outer edge joins the common fuscous streak; fuscous spots near hind margin and posterior angle represented by two imperfect fuscous ocelli in white rings; another similar (or more imperfect) ocellus near subapical projection. Hind wing:—The two ocelli equally distinct and well coloured, but the lower one the larger; anal-angular termination of submarginal streak enlarged and conspicuously fuscous.

♀. Like the male, but with all the fuscous markings broader. Fore wing:—Basal grey ill-defined, or almost obsolete; common fuscous streak of under side usually more or less distinctly marked, interrupted, commencing on subcostal nervure a little beyond cell, and sharply angulated on third median nervule; an additional small white spot immediately beyond the first in apical fuscous; the two large black discal spots usually so suffusedly increased as to be confluent with the hind-marginal fuscous, and so enclosing three or four whitish spots. Hind wing:—The common streak distinct; other markings much as in male; the upper ocellus more obscured with fuscous. Under side:—Duller, much more closely irrorated than in male, inclining to yellowish (in one example very pale sandy brownish). Hind wing:—The

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ocelli remarkably smaller, rather ovate than circular, much duller in colouring.

The subapical projection of the fore wing is considerably longer in the female than in the male.

This butterfly is nearly related to *S. Anacardii*, L. It is distinguished by its smaller size (especially in the male, where it is very remarkable); white, instead of greenish, ground colour; much duller iridescence, and great development of the dark markings, especially in the apical area of the fore wings; while the under side is conspicuously duller and less metallic, more irrorated, without white variegation, and with uncoloured and almost obsolete ocelli in the fore wing. In outline the projections of both wings are much shorter and blunter, especially in the male.

In several of the characters noted, *S. nebulosa* approaches the Madagascarene *S. Dupræi*, Vinson, but it altogether wants the long anal-angular tail of the hind wing so conspicuous in that species, and has much larger dark markings in the hind wing; while the blunt subapical projection of the fore wing is totally different from the long process so conspicuous in *S. Dupræi*.

Three specimens of this butterfly—a male and two females—were taken near St. Lucia Bay, in Zululand, by the late Colonel H. Tower, in the year 1867, and presented to me by him in the following year. It was not until 1878 that I saw another example, Colonel J. H. Bowker having, in November of that year, forwarded to the South African Museum a female found by him in a collection of insects made at D'Urban, Natal, by a resident there. Colonel Bowker has recently sent me a male captured by himself in the neighbourhood of D'Urban.

Mrs. Monteiro's collection contains a fine female taken at Delagoa Bay; and there are three specimens in Mr. Henley Grose Smith's collection, which were sent, I believe, from some part of Tropical Eastern Africa.

## LYCÆNIDÆ.

### Lycænesthes, *Moore.*

### *Lycænesthes livida*, n. s.

Exp. al. 1 in.—1 in. 3 lin.

♂. Shining greyish brown, with a cupreous gloss; in both wings a very pale greyish blue suffusion from

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base. Fore wing:—The suffusion vaguely occupies the lower half of discoidal cell, and covers space between median nervure and its first nervule and inner margin to near posterior angle; an indistinct dark grey lunular mark at extremity of discoidal cell. Hind wing:—The suffusion covers middle field of wing from base, leaving the costa and apical, hind-marginal, and inner-marginal border free; an indistinct dark lunule at extremity of discoidal cell; a little beyond it a curved macular streak between second subcostal and second median nervules; a thin black line on hind-marginal edge; within it a thin white line, most apparent near anal angle, itself immediately preceded by four to six thin whitish lunules, which join with it to isolate spots of the ground colour; these spots are darker near anal angle, that between second and first median nervules being black, bounded interiorly by a well-marked orange lunule. Cilia in both wings whitish. Under side:—Soft pale grey; the markings slightly darker, but distinctly edged on both sides with whitish; in each wing a roughly 8-shaped mark at extremity of discoidal cell, a discal inferiorly-incurved row of more or less confluent similar imperfect rings; a submarginal row of lunules: and a thin hind-marginal whitish edging line. Fore wing:—Basal area quite spotless as far as extremity of cell. Hind wing:—Near base, just below costal nervure, a small but distinct round black spot in a whitish ring; the hind-marginal black spot between second and first median nervules, and a smaller similar spot close to anal angle, conspicuously spangled with a few greenish-silvery scales, and interiorly bounded by an orange lunule; between these two spots a few greenish silvery scales.

♀. Similar to male, but ground colour paler and duller, while the blue suffusion is considerably brighter in hue. Hind wing:—Blue becoming very faint on disc, which bears a transverse row of rather indistinct whitish lunules. Under side as in male.

This *Lycænesthes* is in several respects intermediate between *L. Liodes*, Hew. (the *Emolus* of my 'Rhop. Afr. Aust.' pt. ii. p. 234, pl. 4, figs. 8, 9, apparently not the true *Emolus* of Godart), and *L. Otacilia*, mihi (Trans. Ent. Soc. Lond., 1868, p. 90). It is at once to be distinguished, however, from both species by the singularly pale and dull hue of the bluish suffusion on its upper surface, which in the male contrasts remarkably

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with the universal dark purple of *L. Liodes*, and the well-defined bright violaceous of *L. Otacilia*. In size *L. livida* is larger than *L. Liodes*, and very much larger than *L. Otacilia*. The female has, on the upper side of the fore wing, none of the fuscous spots so strongly marked in the female *L. Liodes*. The under side markings are in both sexes less irregular, and not so dark as in *L. Liodes*, and the ground colour has none of the yellowish brown tinge observable on the under side of *L. Otacilia*.

I first noticed this butterfly in Mrs. Barber's collection in February, 1870, and made a description of the two female specimens which the collection contained, under the impression that they would probably prove to be the female of *L. Otacilia*, mihi. These examples were taken at Highlands, near Grahamstown, and were kindly presented to me by Mrs. Barber. On the 23rd of the same month I captured, at Uitenhage (on Cannon Hill), three males of a *Lycænesthes*, which so closely corresponded with the females mentioned that, upon subsequent comparison, no doubt could be entertained of the identity of species. The males in question were flitting about and settling on the twigs of some bushes at the summit of the hill.

I have not seen any further examples of this dull-coloured Lycænid in the collections that I have been able to examine.

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## XXIX. *On the identity of* Coccus floccosus, *DeGeer, and* Orthezia Normani, *Doug.* By J. W. Douglas.

[Read September 7th, 1881.]

Following Dr. Signoret I had deemed that *Coccus floccosus*, DeGeer, was synonymous with *Orthezia urticæ*, Linn., with the reservation, however, that DeGeer's figure (Mém. vii., pl. 44, fig. 26) was "rude and unsatisfactory" (Ent. Mo. Mag. xvii., p. 175). But at that time I did not know the species I afterwards described and figured, under the name of *Orthezia Normani*, in the present volume of the Transactions of this Society, p. 300, Pl. XV., figs. 12—15, and a renewed investigation induces me now to believe that it was probably this species and not *O. urticæ* that DeGeer had before him. In his figure the very peculiar character of the dorsal laminæ in *O. Normani*—a deep and wide median excision—is tolerably represented, but in this latter species three or four of the anterior segments only have this conformation, the remainder being mostly narrow and straight, whereas in DeGeer's figure each segment has the broad form of lamination equally developed. The lateral laminæ in DeGeer's figure are represented of equal length and breadth throughout; whereas in *O. Normani* only the first three or four are broad, curved, and projecting, the remainder being narrow, straight, parallel, and more backwardly directed. In his description, DeGeer says that the laminæ are arranged like tiles, or the scales of fishes, but this simile is true with respect to *O. Normani*, both as to the dorsal and lateral laminæ, only when the insect is viewed from the front, because it is the upper edge of a lamina that rests upon the lower side of the one *preceding* it; and, with respect to *O. urticæ*, the simile is correct only with regard to the laminæ composing the dorsal ridges, the overlapping of the lateral laminæ not being evident. His further description, "Il y en a d'abord une couche au milieu du corps, plus courtes que les autres et arrangées sur deux lignes, de façon que celles de l'une de ces lignes vont



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rencontrer celles de l'autre rang par leur base, et elles représentent ensemble comme une petite feuille decoupée," may apply either to *urticæ* or *Normani*, yet it seems to suit the latter the best; but his remark respecting the lateral laminæ, " elles sont *toutes* un peu courbées," is the most at variance with *O. Normani*. There is this, however, to be said, that DeGeer's description and figure appear to represent an immature insect, while mine refer to a female with a developed marsupium, and the immature form, male or female, which I have not become acquainted with, may have more of the characters represented by DeGeer.

On a careful consideration of the whole of the facts I now think, notwithstanding the apparent discrepancies, that DeGeer's species is not only quite distinct from *O. urticæ*, but that it is the same that I have named *O. Normani*, and that, therefore, for the latter *O. floccosa*, DeGeer, must be the name to be adopted.

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XXX. *List of Butterflies collected in Chili by* Thomas Edmonds, Esq. By Arthur G. Butler, F.L.S., F.Z.S., &c.

[Read September 7th, 1881.]

Plate XXI.

The following is an account of a very interesting series of Diurnal Lepidoptera from Chili; particularly instructive from the fact that it contains no less than sixty-nine well-marked and one doubtful species, and therefore, being the richest collection ever brought to this country, has given me an opportunity of identifying with certainty nearly the whole of the described species, and thereby correcting the unusually numerous false identifications made by most writers on the Chilian Lepidoptera, and by myself amongst others.

I have also been able, by comparing the typical species for which distinct genera have been erected, to reduce the number of the latter.

Mr. Edmonds's notes, which accompany the collection, are exceedingly valuable.

## NYMPHALIDÆ.

### SATYRINÆ.

### Elina, *Blanchard.*

#### 1. *Elina lefebvrei.*

*Satyrus lefebvrei*, Guérin, Voy. de la Coquille, p. 281 (1829).

*S. montrolii*, Feisthamel, Mag. Zool. ix., pl. 20 (1839).

*Lasiommata montrolii*, Westwood, Gen. Diurn. Lepid., p. 387, n. 15 (1851).

♀, *Elina montrolii*, Blanchard, in Gay's 'Fauna Chilena,' vii., p. 28, pl. 5, fig. 7 (1852).

♂, ♀, Valparaiso.

*Larva.*—"Pale brown, with longitudinal black lines; head pale brown, larger than the second segment, with two black lines and a pale spiracular line edged with



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black beneath; back clouded with brown, of a shade slightly darker than that of the rest of the body; tail bifid. Full-fed in October."

*Food-plant.*—"Coligne" (Chusquea sp.?)

*Chrysalis.*—"Pale brown, with a few streaks and spots of black. *Imago.*—November and December."—*T. E.*

2. *Elina vanessoides.*

*Elina vanessoides*, Blanchard, in Gay's 'Fauna Chilena,' vii., p. 28, pl. 5, figs. 5, 6 (1852).

"Near Corral, province of Valdivia, in March."—*T. E.*

Only males of this species were obtained; it is said, however, to be "not uncommon."

3. *Elina nemyrioides.*

♂, *Satyrus nemyrioides*, Blanchard, in Gay's 'Fauna Chilena,' vii., p. 33, pl. 2, figs. 6, 7 (1852).

♀. Slightly larger than the male, above with three small additional black ocelloid spots upon the tawny belt; secondaries with the submarginal tawny spots larger; primaries below with the basal area, as far as the discal belt, tawny instead of dark brown; only one large blind subapical ocellus upon the belt; outer border paler than in the male; secondaries altogether paler and greyer; the disc grey, no large white patch; expanse of wings, 1 inch 11 lines.

Two somewhat shattered specimens, male and female, taken in "woods below the Baths of Chillan; Valdivia, in woods, February and March, 1880."—*T. E.*

There is absolutely no reason for separating this species generically from *E. vanessoides.*

4. *Elina flora.*

♂, *Satyrus flora*, Philippi, 'Linnæa Entomologica,' xiv., p. 267, n. 4 (1860).

*Hipparchia? flora*, Butler, Cat. Sat., p. 58, n. 25 (1868).

*Pedaliodes oaxes*, Butler, Cist. Ent. i., p. 25, n. 3 (1870).

*Stibomorpha tristis*, Butler (nec Guérin), Lep. Exot., p. 180, n. 3; pl. lxii., fig. 3 (1874).

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*Satyrus tristis*, Reed, Monogr. Marip. Chil., pl. iii., fig. 4 (1877).

*Stibomorpha reedii*, Reed (nec Butler), l. c. explic. de las laminas, lam. iii., fig. 4 (1877).

"Common in marshes in Valdivia, February and March."—*T. E.*

EPINEPHELE, *Hübner.*

5. *Epinephele edmondsii*, n. s. (Pl. XXI., fig. 2).

♂. General coloration and pattern above of *Elina vanessoides*; chocolate-brown, sericeous, and tinted with golden towards the base; lower half of discoidal cell, base of median interspaces, and basal third of median nervules reddish fulvous, separated from the discal band by an oblique series of six elongated shining grey-brown spots, all notched in front, the two last placed transversely so as to form an angle at the second median branch; discal band, consisting of a large blind ocellus, black, with irregular orange iris confluent with a reddish fulvous patch across the median interspaces; fringe grey; secondaries with a large subapical discal fulvous patch; fringe grey; body smoky grey; primaries below fulvous, with cinereous borders mottled and striated with black; the discal band only separated from the ground colour by a black outline; the ocellus black, with two minute white pupils and broad lemon-yellow iris; a whitish marginal border, with slender black external edge; secondaries greyish brown, densely striated with black, the central belt scarcely darker than the ground colour, but outlined externally by a black line bounded towards the costa by snow-white scales; its form nearly as in *Elina flora*; a submarginal sinuated black line and a very slender black marginal line; pectus grey; palpi white; venter pale smoky brown; expanse of wings, 1 inch 11 lines.

"Near Baths of Chillan, on slopes of Cordilleras, in March."—*T. E.*

6. *Epinephele limonias.*

♂, *Satyrus limonias*, Philippi, Linn. Ent. xiv., p. 268, n. 6 (1860); Reed, Monogr. Marip. Chil., pl. ii., fig. 7 (1877).

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♀ ? *S. janiriodes*, Blanchard, in Gay's 'Fauna Chilena,' vii., pl. 2, fig. 8 (1852).

Var. *Epinephele dryas*, Felder, Reise der Nov. Lep., iii., p. 492, n. 851 (1867).

Valparaiso and Valdivia. (See notes at end of paper).

7. *Epinephele valdiviæ.*

*Epinephele valdiviæ*, Felder, Reise der Nov. Lep., iii., p. 493, n. 852 (1867).

♀, *Satyrus luctuosus*, Reed, Monogr. Marip. Chil., pl. ii., fig. 6 (1877).

♂, ♀, *Stibomorpha monachus*, Reed (nec Blanchard), *l. c.*, fig. 5, and explic. de las laminas, lam. ii., figs. 5, 6 (1877).

Valdivia.

Easily separable from *E. monachus* by its paler coloration and the red patches above.

8. *Epinephele monachus.*

*Satyrus monachus*, Blanchard, in Gay's 'Fauna Chilena,' vii., p. 35, n. 5 (1852).

*Pedaliodes lugubris*, Butler, Cist. Ent. ii., p. 25, n. 4 (1870).

*Stibomorpha monachus*, Butler, Lep. Exot., p. 179, n. 2; pl. lxii., fig. 2 (1874).

"Common in woods of Valdivia in February."—*T. E.*

This seems to be a rarer species than the preceding; it is possible that the two are confounded in Chilian collections.

9. *Epinephele tristis.*

*Satyrus tristis*, Guérin, Voy. de la Coquille, p. 281 (1832).

*Argynnis tristis*, Guérin, *l. c.* Atlas, Ins. pl. 15, fig. 5 (1832).

"Central provinces; very common from November to January."—*T. E.*

Much confusion has arisen respecting this species, for which, I believe, I am principally responsible; the true *E. tristis*, as represented by M. Guérin, is an insect rather smaller than *Elina flora*, and without the tawny

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reddish spots on the upper surface of the wings; it is perhaps only a large race of *E. coctei* of the same author, but has the under surface more vividly coloured, especially in some examples; immediately beyond and touching the projecting middle portion of the central belt on the under surface of the secondaries is a large, somewhat triangular, buff-yellow spot (best seen on female specimens), and the costal portion of this belt is bounded externally by a pale buff or bluish grey spot: these characters are described by Guérin thus:—"Les postérieures ont au milieu une ligne d'un blanc jaunâtre, très-sineueuse, dentée inférieurement, se terminant plus haut que le milieu en *une assez grande tache jaunâtre et triangulaire; il y a à la côte*, et dans le prolongement de cette ligne blanche, *une assez grande tache de la même couleur*." This part of the description misled me into supposing that *Elina flora* was intended, I having at that time seen no examples allied to *E. coctei* which showed a trace of such markings as were here described.

The figure by M. Guérin agrees well with the specimens obtained by Mr. Edmonds, and which have, I believe, been regarded in Chili as slight varieties of *E. pales*, to which the species is nearly allied.

As M. Guérin hints, the spots or patches of pale colour form part of the sinuous pale edging of the central belt; the white dots on the pale discal area beyond are very variable in number, frequently disappearing altogether.

The species has what I take to be a rare variety in which the pale markings are wholly wanting from the under surface, and the ground colour of the secondaries is of a sericeous pale smoky brown colour, slightly washed with grey in the female; the central belt and outer border are of a darker brown colour, as usual, and do not differ in form from those of typical examples; two examples were in the general series, and a second pair from "Near La Union, in the province of Valdivia," was subsequently forwarded to me.

### 10. *Epinephele coctei.*

♂, *Satyrus coctei*, Guérin, Voy. de la Coquille, p. 281 (1832); Mag. de Zool. Ins., pl. 11 (1839).

*Erebia coctei*, Westwood, Gen. Diurn. Lepid., p. 380, n. 52 (1851).

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*Epinephele coctei*, Butler, Cat. Sat., p. 68, n. 17 (1868). ♀, Reed, Monogr. Marip. Chil., expl. de las laminas, lam. iii., fig. 3 (1877).

*Satyrus tragiscus*, Reed, *l. c.*, pl. iii., fig. 3 (1877).

"Talcahuano, Chili, in beginning of February."—*T. E.*

I think it extremely probable that this is only a dwarfed form of the preceding; the coloration of the under surface is very similar to that of the variety of *E. tristis* described above.

11. *Epinephele pales.*

*Satyrus pales*, Philippi, Linn. Ent. xiv., p. 268, n. 5 (1860).

Var. *Satyrus janiriodes*, Blanchard (nec Herr.-Sch.), Gay's 'Fauna Chilena,' vii., p. 33, n. 1, but not of the plates (1852).

*Epinephele blanchardi*, Kirby, Syn. Cat. Diurn. Lep., p. 78 (1871).

♀, *Satyrus coctei*, ♂, Reed, Monogr. Marip. Chil., pl. iii., fig. 1 (1877).

"Near La Union, Valdivia."—*T. E.*

The typical *E. pales* is a darker insect than most examples of the species; the latter agree more nearly with Blanchard's description. As Mr. Hewitson used to say, "M. Blanchard has confounded three distinct species under one name"; his supposition, however, that one of these was a *Hesperiid*, which led Mr. Kirby to incorporate it with the *Hesperiidæ*, at p. 607 of his Catalogue, was incorrect.

NEOMÆNAS, *Wallengren.*

This genus principally differs from *Epinephele* in the absence of the oblique band of raised sericeous scales on the primaries of the males.

12. *Neomænas cœnonymphina*, n. s. (Pl. XXI., fig. 4).

♂. Form and coloration above of *Epinephele pales*, but without the sericeous band on the primaries; primaries below also very like *E. pales*, tawny with greyish brown borders; the costal border narrow; an angular blackish ferruginous discal line, its upper extremity arched so as to encircle the subapical ocellus,

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which is black, with yellow iris, and usually two but sometimes only one white pupil; outer border bounded internally by a zigzag black line; fringe spotted with pale buff; secondaries with the basal half chocolate-brown, bounded externally by an oblique irregularly angulated pale yellow line; disc yellowish, striated with red-brown, a small reddish brown costal nebula, and a small unipupillate black ocellus on the second median interspace; outer border almost entirely dark brown, and limited internally by an irregularly zigzag black-brown line; fringe tipped with pale brown; pectus black; legs and venter pale brown; expanse of wings, 1 inch 6 lines.

♀. Larger than the male, paler and redder, the disc of all the wings above ferruginous; primaries with a well-defined blind blackish subapical ocellus; disc below paler than in the male; the edge of the basal half of secondaries white instead of yellow, and twice as broad as in the male; the ocellus wanting; expanse of wings, 1 inch 7 lines.

"Local at Valparaiso; in December and beginning of January, 1880, among 'coligne.'"—*T. E.*

This species, on the under surface, has much the aspect of *Cœnonympha dorus*.

18. *Neomænas fractifascia*, n. s. (Pl. XXI., fig. 3).

♂. Above fuliginous-brown; primaries with a reddish tawny nebula, partly within and partly below the cell, cut by the first median branch; a large black blind subapical ocellus, partly enclosed in an abbreviated tawny discal band, divided by the nervures, and terminating at the first median branch; secondaries with an abbreviated discal band, clouded with brown below the second median branch, and only extending upwards to the radial nervure, enclosing a small blackish spot on the second median interspace; base of wings clothed as usual with golden brown hairs; body blackish; primaries below tawny, the disc occupied by a broad paler belt, enclosing a large black subapical spot with a small white pupil; outer border brown, excepting at the apex, which is tawny; secondaries testaceous varied with white; the interno-basal area broadly blackish, its inferior portion confluent with a broad oblique blackish-edged smoky

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brown band, which is elbowed and more or less completely divided at the extremity of the median vein and between its two branches; four unequal indistinctly pupillated black spots in pairs upon the disc, two towards the costa and two on the median interspaces, the last much the largest; outer border dark brown; pectus black; palpi white; legs and venter brown; expanse of wings, 1 inch 9 lines.

♀. Rather larger and paler than the male; the primaries above all reddish tawny, with the exception of the borders, which are brown, and the black subapical ocellus, which has a small whitish pupil; secondaries with the discal tawny band completed, and not clouded with brown, the black spot larger; wings and body below paler than in the male, the outer borders varied with white; otherwise as in the male; expanse of wings, 1 inch 10 lines.

"In the woods near the Baths of Chillan, on slopes of the Cordilleras, in March, 1880."—*T. E.*

Three examples, all a good deal worn, but perfectly recognisable as belonging to a very distinct new species.

14. *Neomænas servilia.*

♂, *Neomænas servilia*, Wallengren, in Kongl. Vet. Akad. Förhandl., p. 78 (1858); Wien. ent. Monatschr., iv., p. 36, n. 13 (1860); Eug. Resa, p. 354, pl. vi., fig. 1 (1861).

♀, *Stibomorpha decorata*, Butler, Ent. Month. Mag. x., p. 205 (1874); Lep. Exot., p. 179; pl. lxii., fig. 3 (1874).

"Not scarce near Valparaiso, and also at Cauquenes in January."—*T. E.*

15. *Neomænas wallengrenii*, n. s. (Pl. XXI., fig. 5).

♂. Above dark fuliginous-brown; primaries with a black subapical spot; thorax blackish; primaries below tawny, brightest in the cell; the disc crossed by an abbreviated pale creamy yellowish band, cut by the nervures, widest above the third median branch, enclosing a large black subapical ocellus with single white pupil, and iris edged with greyish of the same tint as the discal band; all the borders of these wings pale brown,

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the internal border being wider and darker than the others; secondaries with the basi-abdominal two-thirds smoky brown, divided by white nervures, and crossed by a broad oblique pale buff band from the costa to the median vein, so as almost to fill the discoidal cell; the outer edge of this area is oblique, and very slightly arched from the costa to the second median branch, and from thence to anal angle is zigzag, the whole length bordered externally by a diffused white stripe fading into the discal coloration; disc pale testaceous, crossed by white veins; a small elongate black dot on the first median interspace; outer border regularly smoky brown; pectus black; palpi grey; tarsi reddish brown; venter greyish; expanse of wings, 1 inch 8 lines.

♀. Larger than the male, paler, with bronze-green reflections; the primaries above with the discoidal cell, two oval spots on the radial interspaces touching the inner edge of the subapical black spot, a narrow abbreviated streak below the latter, and a large oval spot on the first median interspace, ferruginous; subapical spot much larger than in the male; secondaries darker, with three large unequal discal ferruginous spots, of which the central one is twice as long as the others; under surface altogether clearer and more brightly coloured than in the male; primaries with the borders paler, varied with creamy whitish; subapical ocellus larger and bipupillated, but with no distinct iris; secondaries altogether more creamy in tint, the darker portions being more olive, the margins pearly white like the veins; two oval blind ocelli with very narrow yellowish iris on a pale greyish olive nebula, one on the second subcostal interspace, and the other, which is larger, on the first median interspace; body below clothed with white hairs; expanse of wings, 1 inch 9 lines.

"Woods below the Baths of Chillan, March, 1880." —*T. E.*

Three slightly worn examples of this very fine species.

ARGYROPHENGA, *Doubleday.*

16. *Argyrophenga edmondsii*, n. s. (Pl. XXI., fig. 6).

Wings above smoky brown, with bronzy reflections; primaries with the discoidal cell rust-red, the disc from



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beyond and below the cell to its second-third suffused with laky-ferruginous; this coloration, however, is absent from above the upper radial vein, and from the second-third of the second median interspace; a large indistinct blackish subapical spot; secondaries with the end of the cell and the greater part of the radial interspace bright ferruginous; three elongate pyriform longitudinal discal streaks, two on the first and second median branches, the third on the internervular fold of the interno-median interspace; fringe pale; body blackish; primaries below tawny orange; costa yellowish; external border pale greyish brown, changing to yellowish towards apex; a large black subapical ocellus with single white pupil and yellow iris partly surrounded by a dusky zone; secondaries olive-brown; a broad slightly irregular longitudinal sulphur-yellow band from the base, through the cell, to the outer border, also six other abbreviated yellow streaks upon the veins, two on the costal, the others on the median and abdominal areas; costal border broadly yellowish; abdominal and external borders cinereous; a submarginal series of olivaceous patches enclosing fusiform spots, the last two of which are of unequal size and black; pectus black; palpi white above, with brown fringe and black lateral line; legs pale brown; venter blackish, irrorated with pale scales at the sides; expanse of wings, 1 inch 7 lines.

"Woods below the Baths of Chillan, March, 1880." —*T. E.*

I have named this very remarkable species after its discoverer. In form it agrees with *Argyrophorus*, but the larger discoidal cell of the secondaries necessitates its being placed in *Argyrophenga*, a group the type of which, although hitherto known only from New Zealand, bears some resemblance to this Chilian species in the pattern of the under surface.

17. *Argyrophenga simplex*, n. s.

Wings above uniformly fuliginous-brown; body blackish; primaries below tawny orange, with narrow costal and broad external and internal pale olive-brown borders; a large subapical black ocellus, minutely bipupillated with white, and with whitish iris; secondaries pale olive-brown; interno-basal area blackish, with green reflections; a small patch of tawny orange on the upper

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half of the cell; a lunate snow-white spot upon the radial interspace, and lying against the outer edge of the third median branch; pectus black, clothed with greenish grey hair; palpi whitish, with a slender black lateral line; legs brownish; venter sordid white; expanse of wings, 1 inch 7 lines.

"Mountains above the Baths of Chillan, March, 1880; scarce and difficult to capture."—*T. E.*

ARGYROPHORUS, *Blanchard.*

18. *Argyrophorus argenteus.*

*Argyrophorus argenteus*, Blanchard, in Gay's 'Fauna Chilena,' vii., p. 30 (1852).

*Chionobas argenteus*, Blanchard, *l. c.*, pl. 2, figs. 9—11.

"Near La Union, province Valdivia, end of January and beginning of February, 1880; very local in the Cordilleras of the central provinces, at an elevation of 6000 to 7000 feet; plentiful where it occurs, but very difficult to catch in consequence of its extreme swiftness and shyness, and the difficult nature of the ground."—*T. E.*

COSMOSATYRUS, *Felder.*

19. *Cosmosatyrus leptoneuroides.*

♀, *Cosmosatyrus leptoneuroides*, Felder, Reise der Nov. Lep., iii., p. 495, n. 857 (1867).

♂, *Satyrus antarctia*, Reed, Monogr. Marip. Chil., pl. ii., fig. 4 (1877).

*Tetraphlebia germainii*, Reed (nec Felder); *l. c.*, explic. de las laminas, lam. ii., fig. 4 (1877).

"Local and rather scarce near Maintenes on the hacienda at foot of the Cordilleras of Cauquenes, in January."—*T. E.*

The succeeding species is the mountain form of this; the true *Tetraphlebia germainii* is evidently the "*Satyrus*" or "*Epinephele promaucana*" of Reed, the female of which is in the British Museum collection.

20. *Cosmosatyrus plumbeolus.*

*Tetraphlebia? plumbeola*, Butler, Cat. Sat., p. 95; pl. ii., fig. 11 (1868).

"Among the mountains at an elevation of about 6000 feet, in January."—*T. E.*

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*C. plumbeolus* is a race of *C. leptoneuroides*, occurring at a higher level, and distinguished by its slightly inferior size, slightly duller coloration, the absence of the pale border to the central belt on the under surface of the secondaries, the absence of white veins (although the short white *dashes* remain upon the female), and the tendency to obscurity of the ocelli and the white spots between them in the male, though in some examples they are sharply defined.

### Hipparchia, *Fabricius*.

#### 21. *Hipparchia chiliensis*.

*Satyrus chiliensis*, Guérin, Voy. de la Coquille, p. 280; Atlas, Ins., pl. 16, figs. 4, 5 (1832).

*Erebia chiliensis*, Westwood, Gen. Diurn. Lepid., p. 330, n. 53 (1851).

*E. chilensis* (sic), Doubleday, List. Lep. Brit. Mus., i., p. 127 (1844); Blanchard (1852).

*Hipparchia chiliensis*, Butler, Cat. Sat., p. 58, n. 24 (1868).

♂, *Satyrus tristis ?*, Blanchard, in Gay's 'Fauna Chilena,' pl. 3, fig. 1 (1852).

*Stibomorpha reedii*, Butler, Lep. Exot., p. 180 (1874).

"Common near Valparaiso in November and December."—*T. E.*

### Faunula, *Felder*.

#### 22. *Faunula stelligera*, n. s. (Pl. XXI., fig. 10).

General appearance of an *Erebia*; pattern and coloration approaching *Neosatyrus ambiorix*; wings above dark rich olive-brown; primaries with three more or less defined deep ferruginous streaks on the median and lower radial interspaces (in some male examples only the central and largest one is present); fringe dark grey, with a slender pale basal line; secondaries with three discal hastate dark ferruginous spots on the radial and median interspaces, and sometimes a fourth minute spot of the same colour nearer to the anal angle; fringe as in primaries; body blackish; wings below paler, the primaries with the basal two-thirds, excepting at the borders, dark ferruginous, sometimes crossed just beyond the cell by an arched and slightly undulated purplish brown line; remainder of the ground colour pale

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olive-brown, speckled with dark brown; a large bipupillated black subapical ocellus with rather narrow yellow iris; secondaries pale olive-brown, speckled with blackish; an acutely zigzag arched black line beyond the cell, beyond which the wing is rather paler, and crossed by whitish veins (although not conspicuously as in *Cosmosatyrus leptoneuroides*); an arched discal series of seven well-defined black-edged snow-white spots; body brown; expanse of wings, 1 inch 10 lines.

"Very local, but plentiful in certain spots on the mountains above the Baths of Chillan in March."—*T. E.*

The sexes of this species are alike; the only difference in the female being the slightly superior size of the ferruginous markings above and of the white spots below.

NEOSATYRUS, *Wallengren.*

23. *Neosatyrus ambiorix.*

*Neosatyrus ambiorix*, Wallengr., Wien. ent. Monatschr., iv., p. 36, n. 14 (1860); Eug. Resa, pl. vi., fig. 2 (1861).

"Common among 'coligne' (arborescent grass), Valparaiso; October—December."—*T. E.*

The orange patch on the upper surface of the primaries is larger in the females than in some of the males; in the latter, however, it varies considerably, sometimes almost disappearing; the female, on the under surface, differs from the male in having two additional ocelli contiguous to and below the subapical one.

24. *Neosatyrus minimus*, n. s. (Pl. XXI., fig. 7).

♂. Allied to the preceding, but of only half the size; the wings of a paler and more olivaceous-brown, with vivid greenish reflections, which in certain lights change to cupreous; the base of the costa and the discoidal cell obscurely sprinkled with ferruginous atoms; thorax dark grey, the tegulæ fringed at the extremities with ferruginous; abdomen brown; wings below olive-brown; primaries with a large ferruginous patch covering the greater part of the cell and the area immediately beyond it; a large subapical bipupillated black ocellus with orange iris (and in the type a second extremely minute ocellus near the external angle); an ill-defined submarginal

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dark brown line; secondaries with five snow-white dots in an arched series between the second subcostal branch and the submedian vein, the third and fourth forming the pupils of two large black ocelli, with extremely narrow and indistinct greyish iris; an ill-defined dusky submarginal line; body below black; legs grey; expanse of wings, 1 inch.

Chili.

I believe the exact locality for this to be "Las Zonas, near Valparaiso," and the date of capture "beginning of October, 1879," but the number unfortunately got detached from its place in the box. It is always safer to affix a number to the pin which holds the specimen.

25. *Neosatyrus boisduvalii.*

*Erebia boisduvalii*, Blanchard, in Gay's 'Fauna Chilena,' vii., p. 32, n. 2 (1852).

*Hipparchia? boisduvalii*, Butler, Cat. Sat., p. 58, n. 26 (1868).

*Homæonympha pusilla*, Felder, Reise der Nov. Lep., iii., p. 487, n. 841 (1867).

Chili. (See Notes at end of paper).

A single example was obtained by Mr. Edmonds, and as it agrees well both with Blanchard's and Felder's descriptions, I conclude that these species are identical.

26. *Neosatyrus ochreivittatus*, n. s.

Above chocolate-brown; primaries with three discal reddish ferruginous dashes forming a large patch, divided by the nervures upon the lower radial and median interspaces; the uppermost dash interrupted by a double blackish spot with reddish ferruginous iris; secondaries with two rounded reddish ferruginous spots on the median interspaces; abdomen dark grey; primaries below reddish ferruginous, the borders brown; apical area densely irrorated with whitish cinereous scales speckled with black; a large subapical oval black ocellus with two white pupils and golden yellow iris; secondaries olive-brown, crossed just beyond the middle by a pale ochreous band; basal area, excepting towards the costa, washed with lilacine as far as the ochreous band; outer margin slaty grey; body smoky brown, with

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pale brown legs; antennæ below pale yellow; expanse of wings, 1 inch 6 lines.

Chili. (See notes at end of paper).

Seems allied to Reed's *S. chiliensis* (the *Neosatyrus ambiorix* of his 'Explicacion de las laminas,' but not of Wallengren); the coloration of the under surface also reminds one of his *S. thelxiope*, but the latter (which he subsequently calls *S. pales*, female), is possibly the female of *N. reedii*.

27. *Neosatyrus violaceus*, n. s. (Pl. XXI., fig. 8).

Near to the preceding, but differing in the coloration of the under surface; the primaries below darker throughout; the secondaries also darker, and with a lilac, instead of dull ochreous, band beyond the middle; five more or less distinct white points nearly halfway between the band and the outer margin; otherwise as in the preceding species; expanse of wings, 1 inch 6 lines.

"Woods near Chillan in March, 1880."

I have examined five examples of this species; it and the preceding species resemble *Tetraphlebia germainii* in the pattern of the upper surface, although quite different in form and size.

28. *Neosatyrus reedii*, n. s. (Pl. XXI., fig. 9).

? *Satyrus janiriodes*, male, Blanchard, in Gay's 'Fauna Chilena,' pl. iii., fig. 2 (1852).

Wings above rich olive-brown, with golden cupreous reflections; primaries with dusky external border and a few ferruginous scales upon the disc; fringe grey; body blackish; primaries below tawny orange, deepest towards the base, the costal and inner borders brown; external border broadly ferruginous, with slightly darker striations; a small round black subapical ocellus with one minute pupil, and an orange iris with incomplete dusky zone; secondaries rich cupreous-brown, sericeous, crossed near the base by an indistinct angular darker line, bordered internally by a few grey scales; an angulated and undulated line just beyond the cell, bounded externally by a diffused lilacine grey streak, which is expanded and widely dispersed upon the costal area almost to

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the apical margin; external area striated with dark brown; interno-basal area blackish; pectus blackish; legs and venter greyish brown; expanse of wings, 1 inch 7 lines.

From Reed's collection; locality uncertain.

I believe this to be the species intended by Blanchard's figure: the other figure (*S. tristis* of Blanchard), for which I proposed the name of *Stibomorpha reedii*, but which I did not describe (for want of a specimen corresponding with the representation), is probably the male of *Hipparchia chiliensis*.

The present species is apparently allied to the "*Satyrus nycteropus*" of Reed (pl. iii., fig. 2), subsequently incorrectly identified by that author with *S. boisduvalii*; *S. nycteropus* is, however, represented with a large bipupillated ocellus on the under surface, and with the wings more produced than in *Neosatyrus reedii*: in these respects it more nearly agrees with *Neomænas cœnonymphina*, from which it however differs in the darker coloration of the disc of the primaries, and the smoky brown, instead of testaceous, coloration of the disc of the secondaries; the undulation of the post-median line on these wings is also quite unlike *N. cœnonymphina*, and similar to that of *N. reedii*.

29. *Neosatyrus humilis*.

*Stygnus humilis*, Felder, Reise der Nov. Lep., iii., p. 489, n. 844 (1867).

"Common in woods in Valdivia."—*T. E.*

This is the *Neosatyrus ambiorix* of Reed's description and figures, but not of Wallengren; Mr. Edmonds had evidently identified it correctly, for he notes it as a "small butterfly, blackish brown on both sides, almost without markings."

NYMPHALINÆ.

EUPTOIETA, *Doubleday*.

30. *Euptoieta hortensia*.

*Argynnis hortensia*, Blanchard, in Gay's 'Fauna Chilena,' vii., p. 24, n. 5 (1852).

*A. hortensis* (sic), Reed, Monogr. Marip. Chil., pl. i., fig. 7 (1877).

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*Argynnis valdiviana*, Philippi, Ann. Univ. de Chile, p. 1088 (1859).

"Near the Baths of Cauquenes; common but local in January; occurs sparingly also at Salto, near Valparaiso, in January."—*T. E.*

Mr. Reed erroneously quotes *E. hegesia* and *E. claudia* as synonyms of this species; although nearly allied and probably only geographical races of one type, they have as much claim to specific rank as have any other constant forms: constancy, and not amount of difference, constitutes a species.

BRENTHIS, *Hübner.*

31. *Brenthis cytheris.*

♂, *Papilio cytheris*, Drury, Ill. Exot. Ent., ii., pl. 4, figs. 3, 4 (1773).

Var. *Argynnis siga*, Hübner, Zutr. Exot. Schmett., figs. 677, 678 (1832).

*Argynnis anna*, Blanchard, in Gay's 'Fauna Chilena,' vii., p. 23, n. 2 (1852); Reed, Monogr. Marip. Chil., pl. i., fig. 6 (1877).

♀ ? *Argynnis montana*, Reed, *l. c.*, fig. 8 (1877).

Valparaiso and Valdivia. (See notes at end of paper).

Owing to the resemblance which the female of this species bears to *A. lathonioides* (the sexes of which are alike) great confusion has arisen respecting it; in Chili this has been complicated in consequence of authors there not examining Drury's figure, and therefore retaining the synonym *A. anna* as the name of the species.

As Reed himself says, "La lámina que ahora doi de esta especie no es buena," there can be little doubt that his figure is intended for *B. cytheris*, female.

In a paper in the 'Scientific Proceedings of the Royal Dublin Society' for 1879, p. 45, Mr. Kirby says:—"Hübner's figure of *A. siga*, and Reed's of *A. anna*, represent the male exactly; Drury's figure is too dark. The species which Reed (and probably Gay) describes as *A. cytheris*, Drury, is distinct, and must retain the name of *A. montana*, under which Reed originally figured it."

In my account of the Lepidoptera obtained during the 'Survey of H.M.S. 'Alert'" in the 'Proceedings of the



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Zoological Society' for the present year (p. 83), I have noted that "one of the females agrees very fairly with Blanchard's figure of *A. lathonioides*," and I have then seconded Mr. Kirby's remark respecting *A. montana*.

The female, which most resembles *A. lathonioides*, differs in the much more vivid coloration of the under surface, and the far less angular series of spots across the secondaries; the spots of the discal series are also more inclined to ocellation, a female example in the Museum having the whole of them pupillated with Λ-shaped white markings.

Mr. Kirby's remark that "Drury's figure is too dark" is due to his not having examined a sufficient series of specimens. Drury's type was from the Straits of Magellan, and an example in the British Museum from Port Famine agrees well with it; none of the Magellan males are quite so brilliantly coloured as the Chilian variety *B. siga*.

### 32. *Brenthis lathonioides*.

*Argynnis lathonioides*, Blanchard, in Gay's 'Fauna Chilena,' vii., p. 22; pl. 2, figs. 1, 2 (1852).

"Cordilleras of the hacienda of Cauquenes, at an elevation of about 6000 feet; January. Rather scarce." —*T. E.*

### 33. *Brenthis modesta*.

*Argynnis modesta*, Blanchard, in Gay's 'Fauna Chilena,' vii., p. 24; pl. 2, figs. 3, 4 (1852).

"Cordilleras of the hacienda of Cauquenes, 8000 to 10,000 feet; January."—*T. E.*

## Pyrameis, *Hübner*.

### 34. *Pyrameis carye*.

*Hamadryas decora carye*, Hübner, Samml. Exot. Schmett., i., pl. 45 (1806).

*Vanessa charie*, Blanchard, in Gay's 'Fauna Chilena,' vii., p. 26; pl. 2, fig. 5 (1852).

"Abundant throughout the country from August to May; larva feeds on *Malva* and nettles."—*T. E.*

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35. *Pyrameis terpsichore.*

*Vanessa terpsichore*, Philippi, Linn. Ent., xiv., p. 266, n. 3 (1860).

"Not so common as the preceding species, but found in all parts; October to April."—*T. E.*

LYCÆNIDÆ.

LYCÆNA, *Fabricius.*

36. *Lycæna adonis.*

*Papilio adonis*, Denis, Wien. Verz., p. 184, n. 11 (1776).

♀, *Cupido improba*, Reed, Monogr. Marip. Chil., p. 67 (1877).

———?

An example was given to Mr. Edmonds by Mr. Reed, who, at the end of his description, remarks—"Hai dos ejemplares de esta especie en la coleccion del Museo Nacional; ignoro donde fueron cojidos." There can be no doubt that the examples were taken in Europe, as there is absolutely no character to separate the specimen which I have seen from *L. adonis*, female.

SCOLITANTIDES, *Hübner.*

37. *Scolitantides collina.*

♂, *Lycæna collina*, Philippi, Linn. Ent., xiv., p. 270 n. 9 (1860).

*Lycæna lyrnessa*, Hewitson, Ent. Month. Mag., xi., p. 107 (1874).

"Common in the Cordilleras in January, and near the Baths of Chillan in March."—*T. E.*

The upper surface of the female is very similar to that of *S. chilensis.*

38. *Scolitantides chilensis.*

♀, *Lycæna chilensis*, Blanchard, in Gay's 'Fauna Chilena,' vii., p. 37; pl. 3, figs. 4*a*, 4*b* (1852).

♂, *Polyommatus atahualpa*, Wallengren, Wien. Ent. Monatschr., iv., p. 37, n. 18 (1860); Eug. Resa, p. 356 (1861).

"Very common at Valparaiso from August to January; also at Copiapo and Cauquenes in January."—*T. E.*

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The male is greyish brown above, with a submarginal series of sordid white lunate spots, and with a more or less developed orange spot on the primaries at the end of the cell: both sexes vary in this last character, and in the depth of colour on the under surface; the species appears to be very common.

LAMPIDES, *Hübner*.

39. *Lampides trigemmatus*, n. s.

Allied to *L. telicanus* of Europe and *L. cassius* of Tropical America; nearest to the former, from which it differs as follows:—Size of Spanish examples, but the female with barely a trace of blue colouring, excepting at the base; the discal spots not distinctly visible through the wings; ground colour below uniformly dove-brown, the white stripes purer, of half the width, and sharply defined; the lunulate discal white stripe of the secondaries replaced by a series of contiguous sagittate spots; three subanal metallic-green pupilled ocelli instead of two; expanse of wings, 1 inch.

"Copiapo, North of Chili; abundant in January."—*T. E.*

The much darker coloration of the under surface, with the more slender and whiter lines and the three metallic spots on the secondaries, give this species a totally different aspect from that of *L. telicanus*, and, excepting in the last-mentioned character, more like that of the *L. elpis* group.

CHRYSOPHANUS, *Hübner*.

40. *Chrysophanus bicolor*.

*Lycæna ? bicolor*, Philippi, Linn. Ent., xiv., p. 269, n. 8 (1860).

♀, *Thecla quadrimaculata*, ♂, Hewitson, Ent. Month. Mag., xi., p. 106 (1874).

Chili.

This is perfectly distinct from the following; not only differing uniformly in size, but the form of the band across the under surface of the secondaries is different, and the orange spot or patch on the upper surface of the primaries is larger.

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41. *Chrysophanus quadrimaculata.*

♀, *Thecla quadrimaculata*, ♀, Hewitson, Ent. Month. Mag., xi., p. 106 (1874).

Male differs from the female in having a large black sexual spot at the end of the cell of primaries; only three small discal orange spots on these wings; secondaries with the orange patch narrower, and divided into four spots by the nervures; expanse of wings, 1 inch 2 lines.

No exact locality noted. "August to October and January; double-brooded; common."—*T. E.*

STRYMON, *Hübner.*

42. *Strymon americensis.*

*Thecla americensis*, Blanchard, in Gay's 'Fauna Chilena,' vii., p. 38, n. 1 (1852).

"Common ,but not abundant, at Valparaiso; October to December; scarçe at Valdivia in February, and at Cauquenes in January."—*T. E.*

PAPILIONIDÆ.

PIERINÆ.

HELIOCHROMA, *Butler.*

43. *Heliochroma leucothea.*

*Papilio* (*D.*) *leucothea*, Molina, Saggio sulla Storia Naturale del Chili, libr. iv., p. 347 (1782).

*Pieris gayi*, Blanchard, in Gay's 'Fauna Chilena,' vii., p. 10, n. 1, pl. 1, fig. 4 (1852).

"Common at Valparaiso from end of September to December, and more scarce in February and March; abundant in the valleys of the Cordilleras of the hacienda of Cauquenes at the end of January."—*T. E.*

I have to thank Mr. Kirby for calling my attention to Molina's work; although the description is only two lines in length, the fact that it is noted as a *Danaus* at once fixes it as one of the *Pierinæ*; and, so much being decided, the description is sufficiently long to fix the identity of the species.

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Colias, *Fabricius*.

44. *Colias vauthieri*.

♀, *Colias vauthieri*, Guérin, Voy. de la Coquille, pl. 15, fig. 2 (1829).

♂, ♀, Chili; everywhere. (See Notes at end of paper).

The male, like the female, is rather larger than that sex of the closely allied *C. rutilans*; the orange colouring is slightly redder, and the outer border more regularly arched inwards towards the costal margin; the median veins are partly blackish on all the wings; the orange area on the primaries below is less diffused; the apex and borders of these wings, and the ground colour of the secondaries, are of a bright chrome-yellow, and the ocelloid spot on the secondaries is smaller and less elongated; expanse of wings, 2 inches.

The average size of the male *C. rutilans* is about 1 inch 9 lines; the female is of about the same size, and differs from that of *C. vauthieri* in the whiter colour of the secondaries above and the more dusky colour of these wings below. I think, therefore, we have here at least a distinct race, although the general resemblance of the two forms is so great that, were they not both already provided with distinctive names, it would be necessary to obtain stronger evidence than we at present possess before running the risk of giving a new specific title to the second form.

44*a*. *Colias rutilans*.

♂, *Colias rutilans*, Boisduval, Sp. Gén. Lep., p. 642, n. 9; pl. 19, fig. 3 (1836).

♂, ♀, Chili.

The insect figured as the male by Reed (Marip. Chil., lam. 1, fig. 3 (1836)) is referable to the following, of which, however, it is but a poor and unsatisfactory representation.

45. *Colias minuscula*, n. s. (Pl. XXI., fig. 11).

Smaller than *C. rutilans*; of the same colours above; the outer blackish border of the primaries in the male wide at apex, but abruptly narrow from the third median branch to the external angle; the outer border of the secondaries also very narrow; the outer border of the

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primaries in the female slightly narrower, more sharply defined, and angular internally; the secondaries with the discal and marginal series of black spots indicating the outer border barely visible, excepting close to the costa; secondaries of both sexes below usually rather more dusky, and with the plum-coloured dash at the base of the median vein more prominent than in *C. rutilans*; expanse of wings—male 1 inch 7 lines, female 1 inch 8 lines.

♂, ♀, Chili. (See Notes at end of paper).

A nearly-allied species to this, but considerably larger, was obtained by Dr. Cunningham at Sandy Point, in the Straits of Magellan, and may be called *C. cunninghamii*.

46. *Colias cunninghamii*, n. s.

♂. Slightly paler in colour than *C. rutilans*; the outer border of the primaries very broad at apex, and crossed by yellow veins close to the costa, abruptly narrowed from the third median branch to the external angle; costal border bright yellow; fringe golden yellow, tipped with rose-red; secondaries with the tips of the subcostal branches and the apical border black-brown; the blackish interno-basal patch on the primaries, and the broad interno-median patch on the basal half of the secondaries, decidedly paler and greener than in *C. rutilans*; apex of primaries and borders of secondaries below greener; form of primaries more acutely triangular; the female has the spots indicating the border of the primaries above smaller, and often partly obsolete, and the under surface of these wings greener; expanse of wings—male 2 inches, female 1 inch 11 lines.

Three pairs. Sandy Point (*Dr. Cunningham*).

The distinctly triangular form of the primaries, due partly to the straighter costal margin, readily marks out this as a good distinct species.

TERIAS, *Swainson*.

47. *Terias chilensis*.

*Terias chilensis*, Blanchard, in Gay's 'Fauna Chilena,' vii., p. 17; pl. 1, figs. 5*a*, 5*b* (1852).

"Double-brooded; November, February, March, and April; larva in December on *Cassia*."

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This is a smaller species than the allied *T. deva*, and the black apical patch is not angulated internally towards the costa, as in that insect.

CALLIDRYAS, *Boisduval.*

48. *Callidryas drya.*

*Papilio drya*, Fabricius, Syst. Ent., p. 478, n. 153 (1775).

*Callidryas drya*, Butler, Lep. Exot., p. 61; pl. xxiii., figs. 5—8 (1871).

*C. amphitrite*, Blanchard, in Gay's 'Fauna Chilena,' vii., p. 20; pl. 5, figs. 1, 2 (1852).

"Common at Valparaiso, and I have taken it in the Cordilleras of the central provinces; it is found also at Copiapo, in the North. Appears in November, December, March, and April; worn specimens in September, and in fact throughout the year. Larva on *Cassia*, end of December and beginning of January; probably double-brooded."—*T. E.*

TATOCHILA, *Butler.*

49. *Tatochila blanchardii.* (Pl. XXI., fig. 15).

♀, *Pieris theodice*, Blanchard (nec Boisduval), in Gay's 'Fauna Chilena,' vii., p. 12: pl. 1, figs. 1*a*, 1*b* (1852).

♂, ♀, *P. autodice*, Blanchard (nec Hübner), *l. c.*, p. 11 (1852).

Common in Chili; male and female, Valparaiso. (See notes at end of paper).

The "*Pieris theodice*" of Boisduval is a species evidently belonging to a different genus, and coming from "Bourou" (not "Peru," as it has been quoted); the only excuse for placing it among these Chilian *Pierinæ* is to be found in a note at the end of Boisduval's description—"This pretty species, approaching, by the under surface, the *autodice* of Chili, is found at Bourou"; but an examination of the description of the upper surface ought at once to have prevented M. Blanchard from imagining that there could be any real affinity between the two species; the words "*anticis serie postica duplice macularum albarum*" representing a character not found in any of the species of *Tatochila*.

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The example figured by Blanchard is a heavily-marked female, the more typical form being that erroneously described by him as "*P. autodice.*"

### 50. *Tatochila demodice.*

*Pieris demodice*, Blanchard, in Gay's 'Fauna Chilena,' vii., p. 13 (1852).

"I have found it commonly at Valparaiso, Chillan, and Valdivia; November to April; probably double-brooded."—*T. E.*

I much doubt the identity of this species with the smaller form found in the Magellan Straits. I think it more probable that the latter is the "*Pieris microdice*" of Blanchard, and that the "*posticis maris immaculatis*" of his description is an individual variation from the commoner type of male which has a series of small black spots, as in the Chilian *T. demodice*; it is hardly likely that the common Magellan species would have remained unnoticed until the appearance of Reed's pamphlet, whilst a form, so rare that no recent collector has come across it, should be known to M. Blanchard.

### 51. *Tatochila autodice.*

♂, ♀, *Synchloe autodice*, Hübner, Samml. Exot. Schmett., ii., pl. 127, figs. 1—4 (1816—36).

♀, *Pontia mercedis*, Eschscholtz, Kotzebue's Reise, iii., p. 215; pl. 9, figs. 22*a*, 22*b* (1821).

*Pieris polydice*, Blanchard, in Gay's 'Fauna Chilena,' vii., p. 12 (1852).

"Common at Valparaiso; also in the Cordilleras, and in the province of Valdivia; November to April; probably double-brooded."—*T. E.*

The three preceding species probably represent the whole of the Chilian species of this genus.

The following description of the larva of *T. theodice* of Reed, and therefore most likely of Blanchard (= *T. blanchardii*) is given by Mr. Edmonds:—*Grey, with longitudinal yellow stripes and black and red dots.* Head grey, and clothed with very fine and short hairs; body grey, with broad yellow subdorsal lines; lateral



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rows of orange-red dots, two on each side of each segment, and with raised black dots thinly scattered over the whole body, each dot emitting a very short and fine hair; claspers and under side dull greenish yellow, with minute black dots; prolegs black. Food-plant, *Tropeolum*. Larva full-fed by the end of November. Valparaiso."

PAPILIONINÆ.

52. *Papilio bias*. (Pl. XXI., fig. 14).

*Papilio bias*, Roger, Bull. Soc. Linn. Bord., i. (1826).
*P. archidamas*, Boisduval, Sp. Gén. Lep., i., p. 321, n. 163 (1836); Feisthamel, Mag. Zool., ix., pl. 37 (1839).
*P.* (*N*) *psittacus* ? ?, Molina, Saggio sulla Storia Naturale del Chili, libr. iv., p. 347 (1782).

"Common in the neighbourhood of Valparaiso."—*T. E.*

There are two things in Molina's description which render the identification of his species with *P. bias* extremely doubtful; the first is, his speaking of it as "*Papilio Nymphalis*"; and the second, his mention of blue spots upon the upper surface of the wings. I know of no Chilian butterfly to which his description will apply.

The following is a description of the transformations of *P. bias*:—

"*Larva.—Dark brown, studded with short orange-yellow spines.* Head black and shiny; second segment with a hard black plate on the back, and on the front part, immediately behind the head, a fleshy protuberance of a yellow colour, which is erected when the larva is annoyed, and then resembles in shape the letter V; on each side of the front of the second segment there is a fleshy horn, yellow at the base and black at the tip, slightly curved forwards; the rest of the body is of a deep madder-brown colour, each segment having a short fleshy spine on each side above the spiracles, and one on each side of the back; these spines are orange-yellow, with the extreme points black; the second, third, and fourth segments have each a dull orange spot above the prolegs; prolegs and claspers black.

"Feeds on 'Oreja de Zovia' (*Aristolochia chilensis*) in October and beginning of November.

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"*Chrysalis.—Brownish grey, rarely dull green.* The covering of the head is produced into a point on each side; the thorax has a high peak on the back and a smaller one on each side; the abdomen has a double row of points on the back; wing-coverings prominent. Imagines emerge erratically, some in December, some in January, February, March, April, and June, and some in the October following. Valparaiso."—*T. E.*

## HESPERIIDÆ.

### Gegenes, *Hübner.*

#### 53. *Gegenes fusca.*

*Hesperia fusca*, Reed, Monogr. Marip. Chil., p. 81 (1877).

Chili.

One specimen (without abdomen), answering well to Reed's description; also the type from Santiago.

### Pyrgus, *Hübner.*

#### 54. *Pyrgus americanus.*

♂, *Syrichthus americanus*, Blanchard, in Gay's 'Fauna Chilena,' vii., p. 44; pl. 3, fig. 10 (1852).

♀ ? *S. notatus*, Blanchard, *l. c.*, p. 45 (1852).

*Hesperia notata* (part), Reed, Monogr. Marip. Chil., p. 80 (1877).

? Near Santiago, Reed's collection.

The number was placed in the box a little below the whole series of *Pyrgus*, but too far from them to satisfy me that it belonged to them, so that I am doubtful respecting the exact locality of the three first species in this genus. (See Notes).

Reed has evidently confounded several species under this butterfly and its female.

#### 55. *Pyrgus fulvovittatus*, n. s.

♀. Upper surface like *P. malvæ*, female, of Europe, excepting that the central band on the secondaries is as perfect (though more sordid) as in *P. americanus*; under surface also much like *P. malvæ*, but the primaries with the inner series of white spots complete, and the

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secondaries differently banded, white, with an indistinct gravel-orange band at the base, a very irregular oblique band of the same colour just beyond the basal third; an angulated dentate-sinuate band, touched here and there with dark brown across the disc, its outer edge only separated from a narrow border, also of gravel-orange (but rather paler), by a series of small lunate spots; abdominal area broadly white, slightly sordid along the margin; body below snow-white; the legs and sides of venter pale pinky brown; expanse of wings, 1 inch 2 lines.

Chili.

The under surface of the secondaries is so unlike that of *P. americanus* that I have no doubt of its distinctness.

### 56. *Pyrgus trisignatus.*

*Scelothrix trisignatus*, Mabille, Bull. Soc. Ent. France, 1875, p. ccxiv.

Chili.

One male of this very distinct species is in Mr. Edmonds's series. I can agree with Mr. Reed in his remark, "Ignoro por qué el Senor Mabille la coloca en el jénero *Scelothrix*."

### 57. *Pyrgus valdivianus.*

*Hesperia notata*, var. *valdiviana*, Reed, Monogr. Marip. Chil., p. 81 (1877).

"Valdivia, March."—*T. E.*

One male of this very distinct species, the upper surface of which resembles *P. sidæ* of Europe; the under surface, however, is varied with olive-green; the bands of the secondaries, which are two in number, upon a sordid white ground, are of a dark olive-green colour, the outer band only separable by its dark colour from a pale olive marginal border. This species is larger than the other Chilian forms.

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PAMPHILA, *Fabricius.*

58. *Pamphila fasciolata.*

♂, *Hesperia fasciolata*, Blanchard, in Gay's 'Fauna Chilena,' vii., p. 42; pl. 3, fig. 7 (1852).

♀, *Hesperia signata*, Blanchard, *l. c.*, p. 42 (1852).

"Valparaiso, October to April; Valdivia, February; Copiapo and Cauquenes in January."—*T. E.*

59. *Pamphila fulva.*

*Hesperia fulva*, Blanchard, in Gay's 'Fauna Chilena,' vii., p. 43; pl. 3, fig. 8 (1852).

"Valparaiso, September to April; abundant."—*T. E.*

There are two forms of this species, one larger and with heavier dark markings than the other.

CYCLOPIDES, *Hübner.*

60. *Cyclopides aureipennis.*

*Syrichthus aureipennis*, Blanchard, in Gay's 'Fauna Chilena,' vii., p. 40; pl. 3, figs. 5*a*, 5*b*, and 6 (1852).

"Valdivia, in woods among the arborescent grass; February and March."—*T. E.*

This species is of the same size and structure as *C. morpheus* of Europe.

61. *Cyclopides fruticolens*, n. s. (Pl. XXI., fig. 12).

Wings above rich chocolate-brown, sericeous; primaries above with a transverse ochreous spot in the cell, a second below it at the base of the first median interspace, and a falciform discal series of five, the uppermost of which is trifid; secondaries with a cuneiform spot across the end of the cell, a smaller rounded spot between the latter and the first median branch, and a discal series, generally absent in the male, but when present consisting of only two spots, ochreous; base streaked with greenish hairs; head and thorax olivaceous, the shoulders and palpi white varied with ochreous; abdomen dark chocolate-brown, ochreous at the sides; primaries below dark brown, the internal area grey; the costal border, apical area, and spots (which are larger

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than on the upper surface) ochreous; secondaries bright ochreous, with sericeous greyish brown abdominal border, crossed by a white stripe from base to outer margin; pectus white; tibiæ and tarsi pale sandy brown; venter white in the centre; expanse of wings—male 1 inch 3 lines, female 1 inch 4 lines.

"Las Zonas in January, and woods near Chillan Baths in March; about cane-bushes."—*T. E.*

Var. *tractipennis.*

♂. Wings more elongated than in the type; the secondaries with the costal margin prolonged; the yellow areas on the under surface washed with reddish testaceous; expanse of wings, 1 inch 3½ lines.

Same localities as the typical form.

Var. *quadrinotatus.*

♂. Primaries above with only four minute cream-coloured spots in pairs; the costal and apical areas below sandy buff; the secondaries bright buff, with the costal border sandy testaceous; the abdominal greyish area also washed with the same colour; expanse of wings, 1 inch 2½ lines.

"Corral, in March."—*T. E.*

Var. *pulcher.*

♂. Wings above brilliantly shot with green; primaries with four bright ochreous dots arranged as in the preceding variety; secondaries with a cuneiform spot closing the cell; primaries below with the costal border and apical area bright gravel-orange; secondaries brilliant golden chrome-yellow; the abdominal greyish area reduced in extent, only seen as a narrow abbreviated stripe beyond the usual white stripe; expanse of wings, 1 inch 2½ lines.

"Corral, in March."—*T. E.*

Mr. Edmonds also adds the following note:—"Valparaiso, January; Valdivia, February; Chillan, March; among 'Coligne.' The specimens from Valdivia are darker, having fewer yellow spots on upper side."

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62. *Cyclopides philippii*, n. s. (Pl. XXI., fig. 13).

Wings above dark purplish brown, with dark green reflections; primaries with ten bright ochreous spots, the first three in an oblique series just before the middle, the fourth in a line with the second within the first median interspace, the fifth to eighth in a nearly straight series across the disc, the lowest two spots of this series being small and close together upon the interno-median interspace, and the uppermost one trifid and slightly oblique, the last two spots very minute, submarginal, and placed upon the radial interspaces; fringe slaty grey, tipped with whitish; basal area sprinkled with yellow scales; secondaries with two ochreous spots beyond the middle, and two discal smaller spots on the median interspaces; the female with two very small additional subapical spots; interno-basal area clothed with greenish hairs; abdominal fringe white; fringe of outer margin as in the primaries; body greenish; the head and palpi with yellowish hairs; the collar, shoulders, and outer margins of tegulæ greenish yellow; abdomen, excepting towards the base, dark brown, with the sides ochreous; primaries below with the costal and apical areas bright ochre-yellow, the central area blackish brown, with spots as above, but larger, internal area greyish; secondaries bright ochreous-yellow, crossed from base to outer margin by two silvery white divergent stripes, one passing through the cell, the other through the interno-median interspace; fringe of all the wings silvery white, traversed beyond the middle by a grey line, and tipped with buff; palpi and pectus creamy white; legs and venter of male, excepting a central longitudinal basal streak, ochreous; the body and wings of female below distinctly paler than in the male, the body being almost wholly white; expanse of wings, 1 inch 2½ lines.

Same localities as typical *C. fruticolens*.

This species is allied to the preceding, though unquestionably very distinct; it also seems allied to "*Butleria sotoi*" of Reed (Marip. Chil., p. 86), of which the following is a description of the secondaries below: —"Alas posteriores por debajo morenas inclinadas a un color ceniciento con la costa maranjada i dos rayas blancas desde la base hasta el borde esterno; entre estas dos rayas hai tres puntos blancos, uno hácia el

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medio i los otros dos hácia el borde esterno. Las franjas por debajo son de un color plomo." It is therefore evident that we have here again a very distinct species.

I have named this beautiful little *Hesperiid* in honour of Dr. R. A. Philippi, whose admirable descriptions of Chilian butterflies are quite a relief after the vague and unsatisfactory diagnoses of some other writers.

### Carterocephalus, *Lederer*.

Whether this genus is sufficiently distinct from *Cyclopides* I will not attempt to decide; at any rate it has little in common with the tropical New World group, to which Mr. Kirby has given the name of *Butleria*,* and which therefore must be deprived of all the known Chilian species.

### 63. *Carterocephalus bissexguttatus*.

*Steopes?* (sic) *bissexguttatus*, Philippi, Linn. Ent., xiv., p. 272, n. 11 (1860).

♂, ♀. "Las Zonas, October; about canes."—*T. E.* (See also Notes).

### 64. *Carterocephalus flavomaculatus*.

*Syrichthus flavomaculatus*, Blanchard, in Gay's 'Fauna Chilena,' vii., p. 44; pl. 3, figs. 9*a*, 9*b* (1852).

*Carterocephalus polyspilus*, Felder, Verh. z.-b. Ges. Wien., xii., p. 495, n. 204 (1862).

Var. *Butleria vicina*. Reed, *l. c.*, p. 88 (1877).

♀, ♀. "Las Zonas, October; about canes."—*T. E.*

Of *C. vicina* Mr. Edmonds writes:—"I have only one specimen from Valdivia, the type taken and described by Reed." It chiefly differs in having the markings of the secondaries below suffused with yellow.

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* Since my enumeration of the forms in the Museum collection (Ent. Mo. Mag., vii., p. 96) notes four species apart from the type quoted as Felder's, and since the latter is congeneric with typical *Carterocephalus*, the type of *Butleria* must be *C. dimidiatus*, Felder.

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65. *Carterocephalus paniscoides.*

*Steropes paniscoides*, Blanchard, in Gay's 'Fauna Chilena,' vii., p. 41 (1852).

*Butleria cauquenensis*, Reed, Monogr. Marip. Chil., p. 87 (1877).

One pair. "Las Zonas, October; about canes."—*T. E.* Reed's type, Valdivia (coll. *T. Edmonds*).

In his subsequent notes Mr. Edmonds regards this as a variety of the preceding, and says :—"*B. cauquenensis*, Reed (I have the type) ? = *polyspila*, Felder, and *paniscoides*, Bl. Valleys at foot of the Cordilleras; frequents moist and marshy places in January. A variable species; all the specimens from the same localities." The differences, however, not only in pattern, but in shape, are too considerable for mere variation. I cannot for a moment question the distinctness of the two species.

66. *Carterocephalus valdivianus.*

♂, ♀, *Syrichthus valdivianus*, Philippi, Linn. Ent., xiv., p. 272, n. 12 (1860).

♀, *Carterocephalus exornatus*, Felder, Verh. z.-b. Ges. Wien., xii., p. 494, n. 203 (1862); Reise der Nov. Lep., iii., pl. 74, figs. 18, 19 (1867).

*Butleria paniscoides*, Reed (nec Blanchard), Monogr. Marip. Chil., p. 82 (1877).

Four males. "Las Zonas, October; about canes."—*T. E.* (See notes at end of paper).

THANAOS, *Boisduval.*

67. *Thanaos funeralis.*

*Nisoniades funeralis*, Scudder and Burgess, Proc. Bost. Nat. Hist. Soc., xiii., p. 293, fig. 7 (1870).

Chili.

We have this species in the Museum from Mexico, and, excepting in its slightly darker colour and longer white fringe, I see nothing to distinguish it from *T. tristis*, Boisd.

The following additional notes on Chilian Butterflies were received from Mr. Edmonds too late for incorporation in the body of the paper. I have, however, retained



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the order and numbering of the species so as to prevent any inconvenience which might arise therefrom:—

NYMPHALIDÆ.

SATYRINÆ.

1. *Elina lefebvrei*, Guér.

"Not uncommon, but very local, near Valparaiso in November and December."

6. *Epinephele limonias*, Phil.

"Common at Valparaiso in November and December; scarcer in Talcahuano and Valdivia in February."

21. *Hipparchia chiliensis*, Guér.

"Usually found on high-lying and barren land, rarely in valleys; occurs in the Cordilleras of Cauquenes abundantly in January (the mountain specimens are larger and brighter than the Valparaiso ones); Talcahuano in February; Valdivia, local, in February."

Notes on two other species, *Faunula leucoglene* of Felder, and a butterfly supposed to be *Epinephele poliozona*, are added, but as the specimens did not reach me until after the completion of the paper I cannot insert them in their natural position; the second of these, moreover, cannot be *E. poliozona*, since it is almost wholly brown below, whereas Felder distinctly says, "*Alæ subtus ferrugineo-ochraceæ*," probably indicating a species more nearly allied to my *Neomænas cœnonymphina*, but with a blind ocellus on the under surface of the primaries.

NYMPHALINÆ.

31. *Brenthis cytheris*, Drury.

"Common, but not abundant, in gardens about Valparaiso in November, December, and January; abundant in Valdivia in February; near the Baths of Chillan in March; and found sparingly in the Cordilleras of Cauquenes at the end of January. Mountain specimens are smaller than others. Larvæ on violet in January; velvet-black, with dull red tubercles."

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PAPILIONIDÆ.

PIERINÆ.

44. *Colias vauthieri*, Guér.

"Appears to be common throughout Chili; occurs at a great elevation in the mountains, and is to be found from October to May."

45. *Colias minuscula*, Butl.

"In August and the beginning of September only the small specimens which you will find in the collection are found (? early brood of *vauthieri* or another species)*; the larger ones appear in October, and the small ones are not seen again until the following August."

49. *Tatochila blanchardii*, Butl.

"Common in the Cordilleras of the central provinces at the end of January, and at Valparaiso from the end of September to April. I think there must be at least three broods."

PAPILIONINÆ.

52. *Papilio bias*, Roger.

"I believe there is only one brood of larvæ each year, but the butterflies emerge at intervals."

HESPERIIDÆ.

54. *Pyrgus americanus*, Blanch.

"Valparaiso, November and December, March and April; Cauquenes, January; and Chillan, March."—*T. E.*

It is possible that more than one species is included in this note; as also in the following applied to *P. notatus* (female of *americanus*). "Valparaiso, September; scarce. Commoner at Cauquenes in January."

* Undoubtedly the latter.—A. G. B.

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62*a*. *Cyclopides sotoi*, Reed.

Mr. Edmonds notes *Cyclopides sotoi* of Reed as "scarce near Valparaiso in December." He cannot refer to *C. philippii*, for, not only does Reed's species differ from mine in the brown colour of the under surface of the secondaries, and in having three white dots between the longitudinal stripes, but the note which follows evidently refers to my insect.*

62. *Cyclopides philippii*, Butl.

"(Hind wings, under side, yellow, with *two* white streaks from base to outer margin), Valparaiso. I have taken a few specimens two successive years only in one spot; it appears to be very local and scarce; among 'Coligne.'"

63. *Carterocephalus bissexguttatus*, Phil.

"Valparaiso in January; Valdivia in February; Chillan Baths in March."

66. *Carterocephalus valdivianus*, Phil.

"Valdivia; common in certain marshes, but local."

The following species have also been forwarded subsequent to the completion of the paper:—

21*a*. *Hipparchia monticolens*, n. s. (Pl. XXI., fig. 1).

♂. Above fuliginous-brown, with cupreous reflections, which change to green in certain lights; primaries with the costal border pale sordid dust-brown; an inconspicuous subapical linear black spot, placed upon an indistinct longer linear testaceous dash, one or two shorter but similar dashes above and below it; fringe of all the wings greyish, indistinctly flecked with whitish; secondaries with a curved discal series of four tawny flecks; thorax dark brown; anal tuft and sides of abdomen pale brown; primaries below shining greyish brown,

* I have since seen a specimen compared with the type of *C. sotoi*, and find that it differs as described above.

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with yellowish reflections, the discoidal area covered by a large diffused tawny area; apical portion of costal area and the extremities of the last subcostal branch and radials ashy white, flecked with brown; a discal series of decreasing longitudinal pale stramineous dashes, the second and third interrupted by a large unequally geminate blind black spot; fringe, excepting at apex, brown; secondaries pale brown, transversely and irregularly streaked with black on the basal third, and crossed beyond the middle by a deeply-notched zigzag and angulated black line, bounding externally a diffused smoky brown band, and bordered by a white line along its outer edge; outer border smoky brown, bounded on each side by a slightly irregular black line; all the veins white; internervular folds pale brassy yellow between the post-median line and the border, the first, second, third, fifth, and sixth interrupted by yellow-edged fusiform blind black spots, the last of which is small and ill-formed; fringe greyish brown, flecked with white; body below greyish; expanse of wings, 2 inches.

One specimen "from mountains above the Baths of Chillan."—*T. E.*

On the under surface this species vaguely resembles *Argyrophorus williamsianus* from the Straits of Magellan.

### 22*a*. *Faunula leucoglene*.

*Faunula leucoglene*, Felder, Reise der Nov. Lep., iii., p. 488, n. 843 (1867).

One specimen forwarded. "Cordilleras of Cauquenes, scarce; in January and February, at an elevation of 9000 to 10,000 feet; hard to capture on account of the difficult nature of the ground."—*T. E.*

This species proves to be of the same form and size as *F. stelligera* (ante); it is easily recognisable by the large broadly black-bordered white spot towards the apex of primaries below.

### 28*a*. *Neosatyrus reedii ?* var. *fuscescens*.

Differs from typical specimens in its slightly smaller size, and in the ground colour of the primaries below being smoky brown, slightly suffused with reddish on the disc; the subapical ocellus also being only represented by

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a small blind black spot. It may possibly be a distinct species, but, having only seen a single example, I prefer for the present to regard it as a variety.

"La Union, in Valdivia."—*T. E.*

Mr. Edmonds remarks that he "took a few specimens among the arborescent grass in February, all rather worn."

37*a*. *Scolitantides plumbea*, n. s.

♂. Allied to *S. collina*, size of *S. chilensis*; differs from *S. collina* in its shining leaden grey colouring, with broad blackish external border and veins; fringe broad, snow-white, spotted with black; below it differs in the brighter colour and black and white fringe of the primaries in the white-mottled interno-discoidal area, white externo-discal area, and blackish and white fringe; expanse of wings, 11 lines.

Chili. (No exact locality noted).

*S. plumbea* is noted by Mr. Edmonds as a variety of *lyrnessa* (= *collina*), but it must certainly be very distinct; with the *Lycæna endymion* of Blanchard (*L. sybilla*, Kirby) it has very little in common.

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## Explanation of Plate XXI.


Fig. 1. *Hipparchia monticolens*. . . . page 484
2. *Epinephele edmondsii*. . . . „ 451
3. *Neomænas fractifascia*. . . . „ 455
4. „ *cœnonymphina*. . . . „ 454
5. „ *wallengrenii*. . . . „ 456
6. *Argyrophenga edmondsii*. . . . „ 457
7. *Neosatyrus minimus*. . . . . „ 461
8. „ *violaceus*. . . . . „ 468
9. „ *reedii*. . . . . „ 468
10. *Faunula stelligera*. . . . . „ 460
11. *Colias minuscula* (male). . . . „ 470
12. *Cyclopides fruticolens*. . . . „ 477
13. „ *philippii*. . . . . „ 479
14. *Papilio bias* (larva). . . . . „ 474
15. *Tatochila blanchardii* (larva). . . „ 473


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## XXXI. *Descriptions of some new* Coleoptera *from Sumatra.* By Charles O. Waterhouse.

[Read September 7th, 1881.]

I have the pleasure of laying before this Society descriptions of three new coleopterous insects just received from Sumatra. They are as follows:—

### RUTELIDÆ.

*Anomala* (*Spilota*?) *Curtisii*, n. s.

Form and appearance of *Euchlora*, but with a long mesosternal spine. Rather elongate-ovate, moderately convex, pale green, with yellow tints; the scutellum, tibiæ, and pygidium especially yellowish; very shining. Head and clypeus moderately thickly punctured, the anterior margin of the latter slightly reflexed. Thorax nearly as in *Euchlora viridis*, but rather less convex, and much more strongly lobed in the middle of the base; moderately thickly and tolerably distinctly punctured; with a very slight abbreviated medial impressed line. Elytra at the base scarcely wider than the base of the thorax, widest behind the middle, very obtusely rounded at the apex, with the ante-apical callus very slightly raised; the lateral margins thickened. Each elytron has about fifteen lines of distinct fine punctures; the first is sutural, the second and third are wide apart (wider apart at the base than at the apex), the space between them is flat and moderately thickly punctured; the fourth and fifth striæ are more impressed, especially at the apex, regular, the intervals narrow (very narrow at the base, gradually becoming wider to the apex), gently convex and almost impunctate; the sixth, seventh, eighth, and ninth striæ are about equidistant, the intervals narrow, the seventh stria is rather irregular, and there are a few punctures on the interval between the sixth and seventh striæ; the tenth stria is not very regular, and joins the eleventh a little behind the middle, so that the space between them is elongate-triangular,



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and is rather thickly punctured; the twelfth and thirteenth striæ are regular, the interval between them narrow; there are a few punctures on the interval between the thirteenth and fourteenth striæ. The pygidium is triangular, nearly twice as broad as long, strongly impressed on each side, convex in the middle, finely margined, rather thickly and strongly punctured, the punctures transverse and open posteriorly; the apex is obtusely notched in the middle. The anterior tibiæ are slender and linear; the larger claw of the anterior and intermediate pairs is bifid, the claws of the posterior tarsi are simple. Length 12½ lines.

*Hab.* Sumatra. A single example captured by Mr. Charles Curtis, after whom I have named it.

This species, from the prolonged mesosternal process and the curiously irregular intervals of the striæ of the elytra, approaches *Popilia reginæ*, Newman, but it is of quite a different form, and it appears to me best placed near *Anomala* (*Spilota*) *irrorella*, Castelnau.

## CETONIIDÆ.

### *Macronota anceps.*

Dull black; thorax moderately thickly punctured with semicircular punctures, with a somewhat broad shallow impression at the posterior portion of the disk, noticeable particularly in the female. Elytra with numerous fine wrinkled striæ, which are more or less obscured by the velvety clothing. Each elytron has three dull red stripes; the first is short and is close to the scutellum; the second extends from the shoulder to the apex, and is in the slightest degree raised; the third is marginal: there is a small yellow spot below the shoulder, between the second and third red stripes; another on the disk at the apex of the first red stripe; and a very small one behind the middle, between the second and third stripes. The pygidium is slightly convex, rather closely punctured, and entirely covered with yellow clothing in the male; the female has a slight longitudinal impression. The femora (except at the apex) and the tibiæ are pitchy red. The anterior tibiæ have three teeth, but the first one is scarcely noticeable in the male. The head has two longitudinal yellow lines. The thorax has two yellow lines on the disk which unite

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posteriorly and form a V, and there are also two yellow lines, which commencing in the middle of the side unite posteriorly in the middle of the base; the wide V thus made is united to the discoidal one by a line running along the margin. These yellow lines are all wanting in the female example, but this may be the result of accident. Length 7 lines.

*Hab.* Sumatra (*C. Curtis*).

This species is closely allied to *M. picta*, Guérin, and *M. aurantiaca*, Voll. It differs in having the femora and tibiæ red, in having the pygidium entirely clothed with yellow; the thorax is very strongly lobed at the base, very slightly angular at the sides in the male; the clypeus is only in the least degree emarginate in front. Besides the yellow lines and the thorax, most of the punctures are filled with yellow.

## BRENTHIDÆ.

### *Eutrachelus sumatrensis*, n. s.

Very close to *E. Temminckii*, Latr., and agrees with it in every respect except that the thorax is a little less broad and less rounded at the sides; the spots on the elytra are similarly placed, but smaller, and the subhumeral one on the fifth and sixth interstices is absent; the basal spot is only on three interstices; the discoidal spot is on the third and fourth interstices only; the posterior band is much narrower, especially towards the margin; at the apex there are only two elongate spots, one on the third interstice, the other on the eighth. Length 33 lines. Male.

*Hab.* Sumatra (*C. Curtis*).



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XXXII. *Descriptions of uncharacterized species of* Eumolpidæ, *with notices of some previously described insects belonging to the same Family.* By Joseph S. Baly, F.L.S.

[Read September 7th, 1881.]

The type specimens of the species described in the present paper, formerly in my collection, are now in the possession of F. D. Godman, Esq.; ultimately they will be deposited in the British Museum.

List of Species.

| | | |
|---|---|---|
| *Metaxyonycha* | *gigas* | Brazil. |
| ,, | *amasia* | Mexico. |
| ,, | *Salvini* | Guatemala. |
| ,, | *pulchella* | Brazil. |
| ,, | *pretiosa* | Ecuador. |
| ,, | *Batesi* | Ega. |
| ,, | *octosignata* | Amazons. |
| ,, | *tarsata* | Parana. |
| ,, | *distincta* | St. Paulo. |
| ,, | *retifera* | Parana. |
| *Chalcophana* | *opulenta* | Bogota. |
| ,, | *mexicana* | Mexico. |
| ,, | *eximia* | Ecuador. |
| ,, | *Jacobyi* | Peru. |
| ,, | *binotata* | Ecuador. |
| *Callisina* | *indica* | India. |
| *Euryope* | *pulchella* | Cape of Good Hope. |
| ,, | *nigrita* | Port Natal. |
| *Corynodes* | *limbatus* | Gaboon. |

*Metaxyonycha gigas.*

Elongata, convexa, sordide fulva, nitida, antennis (basi excepta) nigris; thorace irregulariter punctato, utrinque late sat profunde excavato, lateribus rotundatis, muticis; elytris ad apicem paulo angustatis, apice ipso conjuncto-angulatis; elevato-costatis, interstitiis confuse gemellato-punctatis.



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A. Elytris fulvis, utrisque plagis duabus magnis, prima infra basin subquadrata, secunda prope medium subovata, longe ante apicem abbreviata, viridi-cyaneis, purpureo tinctis.
B. Elytris viridi-cyaneis, apice, limbo externo, fascia commune vix ante medium, extrorsum late abbreviata necnon sutura inter fasciam et basin fulvis.
C. Elytris ut in B, sed fascia ante medium obsoleta.
D. Elytris totis fulvis. Long. 7½ lin.

*Hab.* Brazil, New Friburg.

Head coarsely punctured; encarpæ thickened, smooth, impunctate; eyes subreniform, black; three lower joints of antennæ fulvous, the rest black. Thorax much broader than long; sides rounded, entire, slightly converging towards the apex; disk coarsely punctured, either side with a large deep excavation. Elytra much broader than the thorax, slightly attenuated towards the apex, the latter conjointly angulate; above convex, only slightly excavated below the basilar space, the humeral callus prominent; each elytron with eight raised costæ, more strongly elevated towards the apex, the two outer ones strongly raised for their whole length, the hinder four-fifths of the suture also thickened; interspaces between the costæ irregularly gemellate-punctate.

*Metaxyonycha amasia*, Marshall.

Ann. Nat. Hist. 1864, p. 388 (*Prionodera*).

Elongata, parallela, fulva, nitida, antennarum articulis 7, 8, 9 et 11 nigris; thorace utrinque leviter foveolato, disco sparse, ad latera crebrius-punctato, lateribus rotundatis, tridentatis; elytris læte viridi-æneis, crebre rugoso-punctatis, basi obsolete, ad apicem distincte elevato costatis. Long. 3½—4½ lin.

*Hab.* Mexico, Teapa.

Face deeply impressed longitudinally between the eyes, the latter large, subrotundate, obsoletely sinuate, black; antennæ very slender, filiform, longer than the body in the male, two-thirds its length in the female. Thorax nearly twice as broad as long; sides rounded, armed with three short subacute teeth, which occupy the middle two-fourths of the margin, all the angles mucronate; surface impressed on either side near the

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lateral margin with a yellow fovea; disk sparingly punctured, the punctures more crowded on the sides. Elytra parallel on the sides, conjointly rounded at the apex; convex, distinctly excavated below the basilar space; closely rugose-punctate, transversely rugulose below the basilar space; longitudinally costate at the apex, obsoletely costate on the basilar space, the latter slightly thickened.

*Metaxyonycha Salvini*, Jacoby.

Elongata, convexa, rufo-fulva, nitida, antennis, basi exceptis, piceo-nigris; thorace lateribus rotundatis, tridentatis, disco utrinque excavato, rude et irregulariter punctato; elytris viridi-æneis, elevato-costatis, interspatiis fortiter punctatis. Long. 5½ lin.

*Hab.* Guatemala.

Head coarsely punctured, front and vertex with a longitudinal excavation; antennæ slender, the four lower joints rufo-fulvous, the fifth to the seventh nigro-piceous (the rest broken off). Thorax twice as broad as long; sides rounded, armed with three short subacute teeth; disk coarsely and irregularly punctured, broadly but not deeply excavated on either side. Elytra broader than the thorax, very slightly dilated behind the middle, their apices conjointly subangulate-rotundate; above convex, slightly excavated below the basilar space; each elytron with eight strongly raised longitudinal costæ, the interspaces between which are very deeply punctured; on the anterior two-thirds of the disk and on the outer margin these punctures are irregularly arranged in double rows, the interspaces being irregularly wrinkled; near the suture and near the apex the punctures are uniseriate, the apices of the third to the fifth costæ confluent and only forming a single ridge.

*Metaxyonycha pulchella.*

Elongata, parallela, convexa, fulva, nitida, antennis, basi exceptis, nigris; thorace fortiter irregulariter punctato, utrinque sat profunde transversim excavato, lateribus ante medium angulatis; elytris elevato-costatis, interspatiis confuse gemellato-punctatis; læte cyaneis,

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purpureo tinctis, limbo laterali, apice fasciaque mediali fulvis. Long. 5½ lin.

*Hab.* Brazil; a single specimen from Deyrolle's collection.

Face excavated between the eyes; vertex and front distinctly punctured; clypeus shining impunctate; eyes subreniform, concave-emarginate, shining black; antennæ nearly equal to the body in length, slender, filiform, the four lower joints fulvous, the rest black. Thorax nearly twice as broad as long; sides diverging from the base to just beyond the middle, where they are produced into an ill-defined tooth, from thence they obliquely converge towards the apex; disk strongly and irregularly punctured, impressed on either side with a deep transverse excavation. Elytra much broader than the thorax, parallel, conjointly angulate at the apex, convex, transversely excavated below the basilar space, the latter thickened; each elytron with nine strongly-elevated longitudinal costæ, the first next the suture short; interspaces irregularly gemellato-punctate.

This species agrees in coloration with *M. fasciata*, Lef.; it differs from that insect (judging from the author's description) in the angular sides of the thorax, and in its disk being transversely excavated on either side, a character not mentioned by M. Lefévre.

*Metaxyonycha pretiosa.*

Subelongata, convexa, fulva, nitida, antennis, basi exceptis, tibiis tarsisque, nigris; thorace transverso, disco rude punctato, utrinque profunde transversim excavato, lateribus subangulatis, medio breviter tridentatis; elytris anguste oblongis, apice conjunctim angulato-rotundatis; convexis, infra basin vix excavatis, callo humerali prominenti; rugoso-punctatis, longitudinaliter costatis, costis fere omnino deletis, ad apicem confusis; viridi-cyaneis, margine laterali, apice fasciaque prope medium, fulvis. Long. 6 lin.

*Hab.* Ecuador; collected by Mr. Buckley.

Face excavated between the eyes, front impressed with a longitudinal fovea; general surface of vertex and front irregular, finely but not closely punctured; clypeus

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transverse, its apex broadly truncate; eyes oval, obsoletely sinuate; antennæ nearly equal to the body in length, the three lower joints fulvous, the rest black. Thorax twice as broad as long; sides subangulate, armed in the middle with three very short subacute teeth, anterior and posterior angles mucronate; upper surface very coarsely and irregularly punctured, deeply and broadly excavated on either side. Elytra much broader than the thorax, narrowly oblong, subparallel, conjointly angulate, rotundate at the apex; above convex, slightly excavated transversely below the basilar space, the humeral callus prominent; surface rugose, strongly and closely punctate, each elytron with several ill-defined longitudinal costæ, which are only visible here and there on the surface; one of these near the lateral margin is more distinctly raised and entire.

The robust form, the coarsely-punctured and deeply-excavated thorax, together with the rugose-punctate elytra, will at once separate this species from its allies.

*Metaxyonycha Batesi.*

Elongata, convexa, fulva, nitida, antennis, basi exceptis, tibiis tarsisque nigris; thorace irregulariter punctato, utrinque sat profunde transversim excavato; lateribus tridentatis; elytris anguste oblongis, apice conjunctim angulato-rotundatis; convexis, infra basin excavatis, callo humerali prominenti; crebre sat fortiter sed confuse punctatis, basi et ad apicem obsolete costatis, costis duabus externis magis elevatis, integris; fasciis duabus latis, una basali, utrinque anguste abbreviata, secunda infra medium, communi ad marginem lateralem non extensa, viridi-cyaneis. Long. 5½—6 lin.

*Hab.* Upper Amazons, Ega, St. Paulo; collected by Mr. Bates.

Head coarsely punctured, front deeply excavated; clypeus trigonate, less strongly punctured than the upper face; eyes rotundate-ovate, very slightly sinuate; three lower joints of antennæ fulvous, the rest black. Thorax nearly twice as broad as long; sides rounded, armed in the middle with three short obtuse teeth, anterior and hinder angles mucronate; disk rather coarsely and irregularly punctured, deeply excavated

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transversely on either side. Elytra broader than the thorax, parallel, angulate-rotundate at the apex, convex, deeply excavated below the basilar space, the latter thickened; coarsely and closely punctured, rugulose on the anterior disk; on the basilar space and again at the extreme apex are several ill-defined longitudinal costæ; near the lateral margin are two others more strongly raised and entire.

*Metaxyonycha octosignata.*

Elongata, parallela, convexa, flavo-fulva, nitida, thorace vage punctato, lateribus rotundatis, integris; elytris confuse punctatis, ad apicem elevato-costatis; utrinque maculis quatuor, duabus ad basin, duabusque pone medium, nigro-purpureis. Long. 4 lin.

*Hab.* Amazons; a single specimen collected by Mr. Bates.

Face deeply impressed transversely between the eyes, vertex and front stained with piceous, sparingly punctured; anterior margin of clypeus bidentate; eyes large, subrotundate, slightly emarginate, black; antennæ equal to the body in length, entirely fulvous. Thorax nearly two-thirds as broad again as long; sides regularly rounded, entire, disk sparingly punctured. Elytra broader than the thorax, their sides parallel, their apices conjointly angulate-rotundate; above convex, subrugulose below the basilar space, rather closely punctured, the punctures arranged without order over the general surface, placed in a single row next the suture, and arranged irregularly in longitudinal striæ near the apex, the interspaces between these striæ elevate-costate; on the basilar space are also several nearly obsolete costæ. The four spots on each elytron are arranged as follows:—two immediately below the base, parallel; one covering the humeral callus, narrow, the other near the suture, narrowly oblong; two below the middle, the inner one subquadrate, placed closely to the suture, the outer one situated on the middle of the outer disk, linear-elongate, its apical end parallel with the upper margin of the inner spot, its lower end extending downwards towards the apex of the elytra.

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*Metaxyonycha tarsata.*

Subelongata, convexa, fulva, nitida, antennis, basi exceptis, tarsisque nigris; thorace sat fortiter, irregulariter punctato, lateribus rotundatis, medio obsolete tridentatis; elytris anguste oblongis, apice conjunctim angulato-rotundatis; convexis, infra basin distincte transversim excavatis, elevato-costatis, interspatiis prope suturam uniseriatim, cæteris confuse biseriatim-punctatis; utrinque plaga subquadrata magna infra basin posita, fasciaque vix pone medium, nec suturam nec marginem attingenti læte cyaneis. Long. 4½ lin.

*Hab.* Parana; a single specimen from the collection of the late W. W, Saunders.

Face excavated between the eyes; vertex and front finely but distinctly punctured; eyes rotundate-ovate, obsoletely sinuate; three lower joints of antennæ fulvous, the rest black. Thorax twice as broad as long; sides rounded, their middle obsoletely tridentate; disk strongly punctured, distinctly excavated on the sides. Elytra much broader than the thorax, conjointly angulate-rotundate at the apex, transversely excavated below the basilar space, the excavation not extending to the suture; each elytron with nine strongly-raised longitudinal costæ, the first short, the ninth more strongly raised than the others, the fifth and seventh united at their apices and forming a single ridge; the puncturing of the interspaces on the inner disk uniseriate, the interspaces on the outer disk irregularly gemellato-punctate.

*Metaxyonycha distincta.*

Subelongata, convexa, sordide flava, nitida, antennis (basi excepta) tibiis dorso tarsisque nigro-piceis; thorace lævi, disco remote- ad latera crebrius-punctato, lateribus tridentatis, dente postico fere obsoleto; elytris confuse subcrebre punctatis, punctis ad apicem confuse-striatim dispositis, interspatiis inter has strias convexiusculis; utrinque macula parva oblonga intra callum humerale alteraque pone medium subrotundata, nigro-piceis. Long. 5 lin.

*Hab.* Amazons, St. Paulo.



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Face deeply excavated between the eyes, vertex shining, nearly impunctate; eyes large, oval, slightly sinuate; antennæ nearly equal to the body in length, slender, filiform, the four lower joints flavous, the rest nigro-piceous. Thorax about two-thirds as broad again as long; sides armed with three short teeth, the medial one (placed on the middle of the margin) longer, subacute, the lateral ones shorter and obtuse, the posterior tooth, placed half-way between the middle and the base, nearly obsolete; all the angles mucronate. Scutellum narrowly edged with piceous. Elytra oblong, angulate-rotundate at the apex; above convex, the humeral callus prominent; surface rather closely but not very strongly punctured, the punctures near the apex irregularly arranged in longitudinal rows, the interspaces between which are slightly convex.

Nearly allied to *M. humeralis*, Marsh.; more than twice the size, more convex, the elytra differently sculptured; the basal spot on the elytron situated on the inner side of the humeral callus, and not on the callus itself, as in the other species.

*Metaxyonycha retifera.*

Oblonga, convexa, nigra, nitida; thorace crebre punctato, subrugulose, lateribus oblique rotundato-angustatis, angulis acutis; elytris nigro-purpureis, sutura anguste ænea; utrinque rete crassa valde elevata rufa, areolas irregulares parvas, fundo crebre punctatas includenti, instructis. Long. 5 lin.

*Hab.* Parana.

Head distinctly punctured, labrum fulvous, five lower joints of the antennæ slender (the rest broken off). Thorax nearly twice as broad as long at the base; sides slightly rounded, obliquely converging from the base to the apex, all the angles acute; disk closely punctured, subrugulose. Elytra convex, conjointly angulate at the apex, each elytron entirely covered (the outer limb and the sutural margin excepted) with a strongly-raised coarse irregular rufous network, which encloses numerous closely-punctured, irregular cell-like spaces; this network is formed by seven coarse strongly-raised longitudinal costæ, distorted and rendered indistinct by a number of transverse ridges equal in length and thickness to the costæ

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themselves; outer limb rugose, the sutural margin subcostate.

*Chalcophana opulenta.*

Oblongo-ovata, rufo-testacea, nitida, antennis, tibiis (basi externa excepta) tarsisque nigris; thorace remote et minute punctato; elytris crebre confuse punctatis, prope marginem unicostatis, rufo-aureis; viridi anguste limbatis. Long 4½ lin.

*Hab.* Bogota.

Head trigonate, rather longer than broad; face deeply excavated between the eyes, the excavation extending upwards and forming a wedge-shaped fovea on the front and vertex; eyes, apices of jaws, palpi and antennæ black, the latter two-thirds the length of the body, robust, slightly increasing in thickness towards the apex, the two lower joints nigro-piceous. Thorax twice as broad as long at the base; sides slightly rounded, converging from the base towards the apex, all the angles submucronate; disk shining, remotely punctured. Scutellum piceous. Elytra oblong, conjointly angulate-rotundate at the apex; convex, closely punctured, rugulose; on the side below the humeral callus is an ill-defined longitudinal costa, rufo-aureous; the outer limb, together with the extreme sutural margin, metallic-green.

*Chalcophana mexicana.*

Anguste ovata, convexa, rufa, nitida, antennis, basi exceptis, tarsisque nigris; thorace nitido, impunctato; elytris metallico-purpureis, limbo laterali anguste rufo; infra basin sat profunde excavatis, confuse subseriatim punctatis, punctis ad apicem minus distinctis.

Mas. Tarsorum anticorum quatuor articulo basali dilatato, quam lato plus dimidio longiori, semiovato. Long. 3 lin.

*Hab.* Mexico.

Head wedge-shaped, rather longer than broad; antennæ very slightly thickened towards the apex, nearly equal to the body in length, black, the three lower joints rufo-fulvous. Thorax twice as broad as long; sides almost straight and parallel from the base nearly to the middle, thence rounded and converging towards the apex, all the angles mucronate; disk

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shining, impunctate. Elytra narrowly oblong-ovate, very slightly attenuated towards the apex, the latter conjointly subangulate-rotundate; above convex, rather deeply excavated below the basilar space, the excavation extending upwards along the inner margin of the humeral callus to the base; surface distinctly punctured, the puncturing coarser on the sides, very fine towards the apex; close to the suture the punctures are arranged in a single longitudinal stria; here and there on the disk are traces of double rows of punctures.

*Chalcophana eximia.*

Elongata-ovata, postice attenuata, rufo-testacea, nitida, antennis, basi exceptis, abdomine, tibiis (basi externa excepta) tarsisque nigris; thorace lævi, disco remote et minute punctato, basi serie unica punctorum distinctorum marginato; elytris viridi-æneis, cupreo tinctis, elevato-costatis, costis internis ante medium obsoletis, interspatiis fortiter seriatim punctatis. Long. 5 lin.

*Hab.* Ecuador.

Head trigonate, slightly longer than broad; vertex very finely and distinctly punctured, impressed on the medial line with a longitudinal groove; encarpæ thickened; antennæ nearly three-fourths the length of the body, the basal joint rufo-testaceous, the rest black; eyes, apices of jaws and the palpi also black. Thorax more than twice as broad as long at the base, sides very obliquely converging and slightly rounded from base to apex, all the angles mucronate; disk shining, very sparingly impressed with minute punctures, only visible under a strong lens; basal margin bordered with a single row of distinct punctures. Elytra much broader than the thorax at the base, sides gradually narrowed from the base towards the apex, the latter conjointly angulate; above convex, the humeral callus prominent; surface very coarsely punctured, the punctures irregularly placed in longitudinal striæ; the interspaces rugose, nitidous; each elytron with eight rather strongly-elevated costæ, the three inner ones only visible on the hinder disk, the eighth short, placed immediately below the shoulder and uniting with the seventh a short distance below the humeral callus.

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*Chalcophana Jacobyi.*

Anguste oblonga, convexa, fulva aut piceo-fulva, nitida, abdomine nigro-cyaneo, tarsis, elytrorum dimidio postico antennarumque articulis 4to ad 7tum nigris; harum articulis ultimis tribus sordide flavis; thorace disperse minute punctato; elytris seriatim punctatis, disco externo quadricostatis, costa exteriori valde elevata. Long. 4½—5 lin.

Var. A. Pectore pedibusque totis flavis, thorace magis distincte punctato.

*Hab.* Peru, Chamebayo.

Head wedge-shaped, much longer than broad; vertex minutely punctured; eyes and apices of jaws black. Thorax more than twice as broad as long; sides rounded and converging from base to apex, all the angles mucronate; disk nitidous, very sparingly and minutely punctured. Elytra subquadrate-oblong; sides parallel, their apices conjointly angulate-rotundate; disk convex, each elytron excavated below the basilar space; surface punctured, the punctures rather deeply impressed before the middle, much finer and shallower behind the latter, irregularly arranged in longitudinal rows, the spaces between which form plane smooth impunctate vittæ; on the outer disk these vittæ form four strongly-raised costæ, the outer one of which on its hinder half is still more strongly elevated and forms a narrow keel-like ridge; on the hinder disk the sutural stria is composed of a single row of punctures and is distinctly sulcate.

*Chalcophana binotata.*

Anguste oblonga, convexa, fulva, nitida, tibiis apice tarsisque nigris, metasterno utrinque piceo, abdomine nigro-chalybeo; thorace fere impunctato, nitido; elytris basi distincte, pone medium minute, subseriatim punctatis, disco exteriori quadricostatis, costa exteriori valde elevata; utrisque a paullo ante medium ad apicem maculaque rotundata subbasali inter marginem et suturam posita, nigris, chalybeo vix tinctis. Long. 4¾—5 lin.

*Hab.* Ecuador; collected by Mr. Buckley.

Head wedge-shaped, much longer than broad; front impressed with a faint longitudinal groove; eyes pale;

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apices of jaws black. Thorax more than twice as broad as long at the base; sides very obliquely converging and slightly rounded from base to apex, all the angles mucronate; disk shining, nearly impunctate. Elytra similar in form to those of *C. Jacobyi*, similarly sculptured, with the exception that the punctuation on the anterior two-thirds of the surface is rather more confused, rendering the smooth longitudinal interspaces less distinct; the inner lateral costa is also less distinctly elevated.

DEMATOCHROMA, *Baly*.

Desc. of New Genera and Species of Phytophaga, April, 1864, p. 16.

*Thasycles*, Chapuis, Gen. Col. x. p. 254.

*Dematochroma picea*, Baly.

*L. c.*, p. 16.

Fœm. Antennis quam dimidio corporis paullo longioribus, gracilibus, filiformibus.

*Hab.* Lord Howe's Island.

*Dematochroma cordiformis*, Chapuis.

*Thasycles cordiformis*, Chap., Gen. Col. x. p. 255.

I have received this species under the name *Edusa laticollis*, Fauvel.

*Dematochroma antipodium*, Fauvel.

*Chalcoplasia antipodium*, Fauvel, Bull. Soc. Linn. Normand. vii. 1872, p. 167.

*Dematochroma Kanalensis*, Perroud.

*Colaspis Kanalensis*, Perroud, Mélanges Entom., 1864, p. 162.

*Dematochroma brunnea*, Fabr.

CHRYSOLAMPRA.

*Chrysolampra smaragdula*, Boh.

*Colaspis smaragdula*, Boh., Res. Eugen. p. 170.

*Hab.* Hong Kong.

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CALLISINA.

*Callisina Mouhoti*, Baly.

Desc. of New Gen. & Spec. of Phyt., April, 1864, p. 11.

*Hab.* Siam.

Omitted in v. Harold's Catalogue.

*Callisina indica.*

Ovata, convexa, obscure rufo-picea, nitida; thorace nigro-piceo, evidenter punctato; elytris distincte punctato-striatis, utrisque plaga magna subquadrata baseos, alteraque pone medium subovata, rufo-testaceis; femoribus anticis modice incrassatis. Long. 3 lin.

*Hab.* India?

Head rugose-punctate; inner and upper orbits of eyes nigro-piceous. Thorax one-fourth broader than long; sides straight and parallel from the base to beyond the middle, thence rounded and converging towards the apex, the anterior angles submucronate; disk distinctly but not closely punctured. Elytra subquadrate-ovate, rather strongly punctate-striate; each with a subquadrate basal patch which extends from the outer margin nearly to the suture, and a second subovate, between the middle and apex, rufo-testaceous.

Very similar in pattern to *C. quadripustulata*, separated from that species by the strongly-punctured elytra.

COLASPOSOMA.

*Colasposoma instabile*, v. Harold.

Mitth. Münch. Ent. Ver., Dec., 1877, p. xviii.

*Colasposoma inconstans*, v. Harold, *l. c.*, 1877. *C. varians*, Baly, Ent. Mo. Mag., January, 1878, p. 178.

*Hab.* Lake Nyassa.

The name *inconstans* having been already used by myself for an insect of the same genus described in these Transactions (Phyt. Malay., p. 276), v. Harold's original name sinks into a synonym.

*Colasposoma abdominale*, Baly.

Desc. of New Gen. & Spec. of Phyt., p. 15.

*Hab.* Lake N'Gami.

Not noticed in v. Harold's Catalogue.

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*Colasposoma Lefevrei.*

*Colasposoma abdominale*, Lefevre, Ann. Soc. Ent. France, 1877, p. 315.

*Hab.* Zanzibar.

*Colasposoma aureo-vittatum*, Baly.

Desc. of New Gen. & Spec. of Phyt. p. 14.

*Hab.* India.

Not quoted in v. Harold's Catalogue.

*Colasposoma pulcherrimum*, Baly.

*L. c.*, p. 15. (India). Also not quoted.

*Euryope pulchella.*

Subquadrato-oblonga, convexa, læte cærulea, nitida, femoribus (basi et apice exceptis), capite thoraceque fulvis, capite subcrebre punctato, antice et intra oculos cæruleo marginato, ore antennisque nigris; thorace lato, tenuiter punctato, angulis anticis margineque anguste basali nigris, margine apicali, utrinque abbreviata, late cæruleo; elytris subquadratis, apice late rotundatis, convexis, infra basin leviter excavatis, tenuiter punctatis, interspatiis rugulosis.

Mas. Thoracis lateribus a basi ad apicem rotundato-ampliatis.

Fœm. Thoracis lateribus regulariter rotundatis, antice non ampliatis. Long. 4 lin.

*Hab.* Cape of Good Hope.

Head finely punctured, very broad in the male, less dilated in the female; antennæ in the latter sex less than half the length of the body. Thorax three times as broad as long in the female; still broader in the male; sides rounded and diverging from the base towards the apex in the male, regularly rounded in the other sex; all the angles mucronate; disk finely, sides more coarsely and closely punctured. Elytra subquadrate, broadly rounded at the apex, convex, faintly excavated below the basilar space, the humeral callus prominent; surface rugulose, subopaque, finely but not closely punctured.

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*Euryope nigrita.*

Breviter ovata, convexa, piceo-nigra aut nigra, nitida, labro antennarumque basi piceis; thorace tenuiter subcrebre punctato; elytris confuse, tenuissime punctatis, punctis prope marginem magis distinctis, substriatim dispositis. Long. 3½ lin.

*Hab.* Port Natal, Zululand.

Head finely punctured on the vertex, lower face more strongly and closely punctured, space between the eyes excavated; jaws coarsely punctured; antennæ half the length of the body, the three lower joints piceous, more or less stained with black. Thorax nearly twice as broad as long; sides nearly straight, diverging from the base nearly to the apex, thence abruptly converging to the anterior angles, all the angles acute, mucronate; disk finely but distinctly punctured, the puncturing coarser and closer on the sides; on either side of the anterior disk, near the lateral margin, is a faint longitudinal excavation. Elytra coadnate, convex, very finely and distinctly punctured, the punctures more distinct on the sides where they are irregularly placed in longitudinal striæ.

*Corynodes limbatus.*

Elongato-ovatus, postice ampliatus, convexus, niger, nitidus, capite piceo-fulvo, vertice, orbitis antennisque (his basi exceptis) nigris; thorace quam longo distincte latiori, subconico, piceo-fulvo, utrinque macula irregulari nigra ornato; elytris minus nitidis, crebre punctatis, nigris, utrisque limbo (basi excepta) piceo-fulvis. Long. 6 lin.

*Hab.* Gaboon.

Head shining, very minutely punctured; antennæ more than half the length of the body, the six outer joints compressed, slightly dilated. Thorax nearly a third broader than long at the base; sides obliquely converging from the base towards the apex, more quickly converging near the latter, the hinder angles very acute; disk minutely punctured, impressed on either side with a deep fovea. Elytra convex, not depressed below the basilar space, closely subrugose-punctate, three basal joints obscure piceous, stained with black.



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*Corynodes tuberculatus*, *C. fraternus*, *C. gratiosus*, *C. pretiosus* and *C. Dohrnii*, quoted in v. Harold's Catalogue as having been originally described by Mr. Marshall, were all previously characterized by myself in 'Descriptions of New Genera and Species of Phytophaga,' published at Stationers' Hall, April 19th, 1864.

*C. Mouhoti*, described by me from Cambodia, in the same paper, p. 7, is not quoted in the Catalogue.

*Dormorhytis ornatipinna* from Ceylon, *l. c.*, p. 8, and *Callisina Mouhoti* from Cambodia, *l. c.*, p. 11, are also not quoted.

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## XXXIII. *On some new* Coleoptera *from the Hawaiian Islands.* By D. Sharp.

[Read October 5th, 1881.]

Since my last paper on the Sandwich Islands Coleoptera was published by the Society, Mr. Blackburn has been able to give but little attention to Entomology, owing to his being much occupied with the duties of his official position, and thus prevented from leaving home. I am, however, able to offer to the Society descriptions of thirty-four new species, a large portion of which are due to a visit Mr. Blackburn was able to make to the large island of Hawaii a year or two ago. I hope before long to make another contribution to a knowledge of this interesting insular fauna, the entomological portion of which, notwithstanding Mr. Blackburn's successful efforts, is still far from being completely known.

### NITIDULIDÆ.

Mr. Blackburn has been very successful in adding to the remarkable series of Hawaiian species of this family, so that I am able to describe here eleven new species, and yet have been obliged to leave untouched several obscure forms, which, in the absence of sufficient material, could not with certainty be treated as distinct species. These new discoveries necessitate the establishment of two new groups in the genus *Brachypeplus*, in addition to those briefly characterised in the 'Transactions' of the Society, 1878, p. 132. The first of these groups consists of species of small size, and but little depressed form, the elytra especially being convex or subinflated, the eyes are moderately large, and do not extend quite to the hind margin of the head, although they may nearly attain it; but the group is especially characterised by the fact that the prosternal process is abruptly curved upwards behind the coxæ. The species approach, on the one hand, to the genus *Gonioryctus*; on the other, to the *B. discedens* group of *Brachypeplus*, so



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that it may be placed at the head of the Hawaiian series of the genus; it consists of *B. tinctus*, *B. proteinoides*, *B. inauratus*, *B. affinis*, and *B. bidens*. I will take this opportunity of correcting an error that by inadvertence occurred in the 'Transactions' of the Society, 1879, p. 85, with regard to *P. proteinoides*. The description of that species should have been placed before, instead of after, that of *B. explanatus*, and the expression "allied to the preceding" refers not to *B. explanatus*, which belongs to another group, but to *B. tinctus*. The second new group must be established for the very remarkable *B. blackburni*. There can be little doubt that this will form a distinct genus from the other *Brachypepli*; but at present I prefer to leave it as a group thereof, for I think that increased knowledge and material will lead to the arrangement of the Hawaiian *Brachypepli* in several distinct genera, but this can be better done when the species are most of them known than when they are in large part still unknown. The *B. blackburni* differs by its shining and glabrous surface, its slender legs, comparatively narrow and convex form, by the slight constriction of the head behind the eyes, and, most decidedly of all, by the elongation of the basal portion of the pronotum, which rests on the elytra, and which, instead of having a very fine indistinct basal margin, possesses a broad flat one. The antennal grooves on the under side of the head converge very little towards the middle, but extend nearly directly backwards.

With regard to the other new species of *Brachypeplus* here described, it is only necessary to remark that *B. vestitus* is a very distinct species, apparently belonging to the *B. discedens* group, to which group must also be assigned *B. metallescens* and *B. varius*. *B. guttatus* and *B. sordidus* are very distinct species of the *B. robustus* group, while *B. striatus* and *B. obsoletus* belong to the group of *B. omalioides* and allies.

*Brachypeplus inauratus*, n. s.

Vix latus, parum elongatus, subdepressus, subopacus, tenuiter sed conspicue pubescens, fusco-testaceus, æneotinctus, antennis pedibusque sordide testaceis; prothorace transverso, fortiter crebre punctato, lateribus rotundatis; elytris conspicue seriatim punctatis, interstitiis obsolete punctatis; abdomine crebrius fortiter punctato. Long. 4, lat. 1½ mm.

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Antennæ dusky yellow, rather short. Head not very broad, rather closely and coarsely punctate. Thorax strongly transverse, transversely convex, the front margin straight, the sides regularly rounded, the base slightly broader than the front margin, the hind angles obtuse, the surface very brassy, coarsely and closely punctured, with a fine but distinct pubescence of a pale golden colour. Elytra elongate, but leaving exposed two and a half segments of the hind body, bearing distinct though fine series of punctures, and with the interstices indistinctly punctured, but more distinctly pubescent. Dorsal plates of hind body coarsely and closely punctate. Legs sordid yellow, the tarsi darker.

The specimen described is a male, and has the hind margin of the last dorsal plate rather deeply notched, and leaving a supplementary segment exposed.

The species is allied to *B. tinctus*, but the head is not so broad, and not so truncate behind the eyes, the thorax is shorter and the puncturation coarser, the pubescence more conspicuous, and the notch at the apex of the last dorsal plate deeper.

Found on flowers at an elevation of about 7000 feet on Mauna Kea, Hawaii.

*Brachypeplus affinis*, n. s.

Vix latus, parum elongatus et depressus, subnitidus, tenuiter pubescens, testaceus, plus minusve infuscatus, capite prothorace elytrisque metallico-tinctis; prothorace transverso, fortiter punctato, lateribus rotundatis, angulis posterioribus rotundato-obtusis; elytris seriatim subtiliter punctatis. Long. 3¼, lat. 1½ mm.

Thorax rather strongly transverse, the sides much rounded, not in the least sinuate near the hind angles, which are not only obtuse, but indefinite, owing to being slightly rounded; the surface rather coarsely punctate. Elytra with distinct series of fine punctures, the interstices very obscurely punctulate. Dorsal segments of hind body moderately closely and coarsely punctured.

In the male the apex of the last dorsal plate is broad, but is only very slight emarginate, and its angles are excessively obtuse, and somewhat thickened, but very little prominent.

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The species is closely allied to *B. inauratus*, but the sculpture of the thorax is less dense, that of the elytra finer, that of the dorsal segments less coarse and close, and the male has the extremity of the last dorsal plate less emarginate, and the angles scarcely at all prominent.

Mr. Blackburn found this species by beating flowers at an elevation of about 3000 feet on Mauna Kea, Hawaii.

*Brachypeplus bidens*, n. s.

Vix latus, parum elongatus, tenuiter pubescens, fuscus, pedibus, capite thoraceque testaceis, elytris metallescentibus, abdominis segmentis dorsalibus, æneo-fuscis, antennis rufo-obscuris basi dilutiore; thorace haud fortiter transverso, crebre parum fortiter punctato, elytris obsolete seriatim punctatis. Long. 4, lat. 1¼ mm.

Head flat, distinctly, moderately coarsely punctate, finely pubescent, testaceous, but with a metallic tinge. Thorax rather large, longer than broad, truncate in front, the sides rounded, obscurely sinuate near the hind angles, which are definite and nearly rectangular, the surface is rather finely and evenly punctate, and delicately pubescent, the colour is yellow, but on the front and middle it is tinged with brassy. The elytra are of a brassy colour and are rather convex; their sculpture is fine and indistinct, and their pubescence short and scanty; on careful examination it can be seen that there is a serial arrangement of the punctures. The basal segments are moderately closely and finely punctate. The legs are yellow.

The individual described is a male, and is remarkable by the excision of the hind margin of the last dorsal plate, which is so formed that each side projects, as a short, distinct, acute tooth.

The species is allied to *B. proteinoides*, but is much broader, and the puncturation of the thorax is less distinct; in the male of *B. proteinoides*, moreover, the apical dorsal plate is only slightly excised, and the teeth formed by the sides are short, obtuse, and but little distant.

Found on flowers on Mauna Loa, at an elevation of about 4500 feet.

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*Brachypeplus vestitus*, n. s.

Suboblongus, parum latus, depressus, fusco-niger, capite superne, pronoto elytrisque ænescentibus, antennis pedibusque flavis, femoribus fuscescentibus; densius pubescens, opacus. Long. 3¾, lat. 1¼ lin.

Antennæ pale yellow, with broad club. Head small, about half as broad as the thorax, closely and moderately coarsely punctured. Thorax strongly transverse, the sides much rounded, narrower at the front angles than at the base, truncate in front, the anterior angles not being in the least prominent, the posterior angles obtuse, the surface but little uneven, rather coarsely punctate, and with a fine, regular, rather elongate pubescence of a very pale flavescent colour. Elytra not twice as long as the thorax, parallel-sided, nearly truncate behind, the sutural angles almost rectangular, the outer angles but little rounded; their surface is finely and indistinctly punctate, and has indistinct series of very fine punctures; the obscure sculpture is more difficult to perceive on account of the conspicuous pubescence, which is similar to that of the thorax. The three exposed dorsal segments are dull black, with a faint metallic tinge, and are obscurely but rather closely punctured, and delicately but distinctly pubescent. The legs are short, the tibiæ and tarsi yellow, the femora infuscate.

This species is allied to *B. puncticeps*, but differs from it very decidedly by the much narrower form and the pubescent surface. The sex of the only individual I have seen is doubtful to me; the front tibiæ are much curved, and the apex of the last dorsal plate is rounded and simple, not depressed in the middle.

Found on flowers near Honolulu at an elevation of about 1500 feet.

*Brachypeplus metallescens*, n. s.

Latiusculus, haud elongatus, depressus, fuscus, supra ænescens, prothoracis marginibus testaceis, antennis pedibusque testaceis, illarum clava infuscata, parcius pubescens, elytris obsolete punctatis, punctis seriatis subtilissimis. Long. 4¾, lat. 1⅔ mm.

Head rather more than half as broad as the thorax, densely (male) or closely (female) punctate, with a brassy

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tinge. Thorax strongly transverse, truncate in front, with the anterior angles not prominent, extremely rounded, sides much curved, the base broader than the front, the hind angles obtuse, the surface closely punctured, sparingly pubescent. Elytra very indistinctly punctate, and sparingly pubescent.

The male has all the tarsi broader than they are in the female; the apex of the last dorsal segment is truncate, and in the middle obscurely emarginate; the extremity of the last ventral segment is rather broadly truncate and slightly emarginate. The head is rather broader than in the female, and is more densely punctate. The thorax is rather larger, and more closely punctate on the disc. In the female the apex of the last dorsal segment is rounded, but is depressed, so that its form is obscure; the hind margin of the ventral plate is rather narrow, and is truncate, and not emarginate, but rather slightly rounded.

The species is closely allied to *Brachypeplus discedens*, but has the thorax more densely, the elytra more obsoletely, punctate.

Found on flowers of *Freycinetia* and other plants on Mauna Loa and Mauna Koa, Hawaii, ascending to 5000 feet.

*Obs.* As the differences between the sexes of this species are similar to those which I found to obtain between *B. discedens* and *B. puncticeps*, I have now little doubt that *B. puncticeps* is the male, *B. discedens* the female, of one and the same species, and I propose that it should bear the name of *B. discedens*.

*Brachypeplus varius*, n. s.

Sat latus, depressus, fusco-testaceus, supra subænescens, subtiliter pubescens, antennarum basi pedibusque testaceis, tarsis fuscis; prothorace fortiter transverso, crebre punctato; elytris subimpressis, seriatim punctatis, interstitiis obsolete punctulatis. Long. 4, lat. 1½ mm.

Antennæ dusky, with the two or three basal joints yellow. Head fuscous, with a brassy tinge, rather closely punctate. Thorax strongly transverse, slightly broader at the base than at the front angles, the sides much rounded, the front angles not in the least produced,

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indeed the length is almost greater along the middle than at the sides, the hind angles obtuse; testaceous, or fusco-testaceous in colour, with a brassy tinge, rather coarsely and not closely punctured; the disc with some very obscure depressions. Elytra fusco-testaceous, with a brassy tinge, the colour not quite uniform, but somewhat variegate, extremely finely striate, and the striæ bearing indistinct punctures; the interstices very obscurely, but still just perceptibly, elevated, very indistinctly punctate, finely and sparingly pubescent, their surface not quite even, but with some obscure depressions. Dorsal segments rather closely punctate. Under surface either testaceous or fuscous; legs yellow, tarsi infuscate.

The male has the tarsi slightly broader than they are in the female, and the hind margins of the dorsal and ventral plates of the last segment are truncate in it, while they are rounded in the female.

This species is allied to *B. discedens*, but is not so broad and depressed in form; the elytra have their surface uneven, and their serial sculpture more strongly marked; the species, in respect of its colour, form, and sculpture, makes a slight approach to the *B. impressus* group.

Found on flowers on Mauna Loa, Hawaii, at an elevation of about 4000 feet.

*Brachypeplus guttatus*, n. s.

Robustus, sat latus et elongatus, parum depressus, opacus, parum pubescens, rufo-fuscus, elytris guttis testaceis vel rufis ornatis, pedibus fusco-testaceis; prothorace dense rugoso-punctato, disco obsolete quadriimpresso; elytris striatis, dense parum argute punctatis. Long. 5—6, lat. 2—2½ mm.

Antennæ rather short, with broad club, reddish, the third joint infuscate. Head broad, densely punctate. Thorax transverse, the front margin a little emarginate, the angles very obtuse, the hind angles definite, not in the least rounded, distinctly obtuse; the sides but little rounded, the base slightly broader than the front margin; the colour is a mixture of fuscous with red; the surface is quite dull, very indistinctly pubescent, densely punctured, and on the middle are four shallow impressions.



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Elytra a good deal longer than the thorax, with distinct striæ, which are very indistinctly punctured; the interstices are slightly convex, their whole surface is densely but indistinctly punctured and finely pubescent; they are ornamented with some pale red or yellow spots, one at the humeral angle, one between this and the scutellum; the humeral mark extends backwards along the side, and near the middle is connected with a spot placed internally to itself; near the hind margin are two other spots; all these spots are more or less elongate in the longitudinal direction. The exposed dorsal segments are rather closely punctured. The legs are yellow, the base of the femora infuscate, and the tibiæ more or less fuscous along their margins.

The sexual characters are not conspicuous, but the male has the last ventral plate shorter than in the female, and so leaving exposed beneath a short supplementary segment.

Found near Honolulu among the sap exuding from a Koa tree.

*Brachypeplus sordidus*, n. s.

Robustus, sat latus, parum elongatus et depressus, opacus, parum dense sed conspicue pubescens, fuscus, antennis rufis, pedibus fusco-testaceis; prothorace fortiter transverso, obsolete punctato, dorso tri- vel quadriimpresso; elytris vix striatis, parum distincte punctatis. Long. 5, lat. 2 mm.

Head rather small, somewhat coarsely but indistinctly punctured. Thorax strongly transverse, slightly emarginate in front, the sides a good deal more rounded in front than behind, the hind angles nearly rectangular; the surface quite dull, with a coarse but quite obsolete puncturation, and with a scanty but very distinct pale yellow pubescence, on the disc behind the middle with two distinct impressions, and in front of these with a third larger but more indistinct impression that is indistinctly divided into two. Elytra very dull, and rather uneven, but without distinct striation or puncturation, and with a scanty irregular pubescence. Hind body rather coarsely but not deeply punctured.

I have before me only a single female individual, in very decayed condition, of this species; it belongs to the *B. robustus* group, but is less depressed than other

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Hawaiian *Brachypepli* hitherto described, and is remarkable by the peculiar uneven surface of the elytra, which at the same time show no distinct sculpture.

Found on Mauna Loa at Kilauea, near the "lake of fire," by beating, at an elevation of about 4000 feet.

*Brachypeplus striatus*, n. s.

Latus, depressus, subopacus, parcissime pubescens, irregulariter fusco-testaceus; prothorace crebrius ruguloso-punctato, disco sat profunde quadri-impresso; elytris profunde striatis, parum inæqualibus, interstitiis angustis; abdomine fortiter crebriusque punctato. Long. $2\frac{2}{3}$, lat. $1\frac{1}{2}$ mm.

Thorax strongly transverse, very truncate in front, with the anterior angles excessively indistinct, the sides much rounded, a little straightened before the base; the hind angles very definite, distinctly obtuse; the surface coarsely and closely punctured, the disc with four rather definite impressions. Elytra with the surface slightly uneven, owing to some indefinite impressions, the most marked of which are two near the suture some distance behind the scutellum; they are very deeply striate, the striæ being coarsely punctate; the interstices are only about as broad as the striæ, and are not distinctly punctured, although they bear fine short hairs. The dorsal segments are coarsely and closely punctured.

The species is closely allied to *B. inæqualis*, but differs therefrom by the more closely punctured thorax, the more deeply striate elytra, and more densely and coarsely punctate dorsal segments.

Found on Mauna Kea, at an elevation of about 4000 feet.

*Brachypeplus obsoletus*, n. s.

Parum latus, depressus, opacus, brevissime pubescens vel setulosus, fusco-rufus; prothorace dense subrugulose punctato, disco parum distincte quadri-impresso, angulis posterioribus rectis; elytris subæqualibus, regulariter seriatim et fortiter punctatis, interstitiis planis; abdomine opaco, dense subobsolete punctato. Long. $4\frac{1}{2}$, lat. $1\frac{2}{3}$ mm.

Thorax strongly transverse, the sides flat, but little turned upwards, the front margin very slightly emarginate, the front angles very obtuse but not rounded, the

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sides curved and sinuate in front of the base, so that the very definite hind angles are rectangular; the surface is densely but indefinitely rugulose-punctate, and the disc bears four rather indistinct impressions. The elytra are depressed, their surface is but little uneven; they bear very regular and distinct striæ, which are coarsely but indistinctly punctured; the interstices are very flat, and bear fine short setæ arranged in a serial manner. The hind body is very dull, and is densely punctate, but the puncturation is very indefinite.

The species is readily distinguished from those yet known; it comes nearest *B. omalioides*, but is very distinct by the dull surface, and the very dense, peculiarly subobsolete, sculpture of the dorsal segments; it is very similar in form to an *Omalium*, such as the European *O. rivulare*.

Three specimens of this species were found in the stem of a dried fern, at an elevation of about 3000 feet, on Mauna Kea, Hawaii.

*Brachypeplus blackburni*, n. s.

Fere angustus, parum depressus, nigro-æneus, nitidus, lævigatus, antennarum basi pedibusque sordide testaceis; prothorace subquadrato, elytris angustiore; his elongatis subtiliter seriatim punctatis, interstitiis vix punctatis. Long. $3\frac{2}{3}$, lat. $1\frac{1}{2}$ mm.

Antennæ rather elongate, with large and abrupt club, the 8th joint not being transverse. Head with broad neck, and therefore little constricted behind the eyes; the surface sparingly and rather finely punctured. Thorax elongate, nearly as long as broad, truncate in front; the sides but little curved, but distinctly sinuate some distance before the base, the hind angles rectangular; the surface sparingly punctate like the head. Elytra elongate, with distinct series of fine, rather distant, punctures, and the interstices between these very finely and sparingly punctured. Legs elongate and slender, sordid yellow.

I have much pleasure in naming this remarkable Nitidulid after Mr. Blackburn, who discovered it by beating flowers on Mauna Loa, Hawaii, at an elevation of over 4000 feet.

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ANOBIIDÆ.

Of this family Mr. Blackburn has discovered about thirteen new species, and these I have been obliged to refer to three new genera, *Cœlosternus*, *Xyletobius*, and *Holcobius*. Of these three genera, one—*Cœlosternus*—belongs to the *Dorcatomini*, the most specialised of the groups of the *Anobiidæ*; and as *Cœlosternus* is the most evoluted of all the forms of *Dorcatomini* hitherto described, it marks as yet the extreme point of specialisation attained by the *Anobiidæ*. The other two genera, *Xyletobius* and *Holcobius*, are widely different from *Cœlosternus*, and are rather closely allied *inter se*; they belong to the *Xyletinini*, a group not sharply divided from the *Anobiini*, and which may be considered as the central one of the *Anobiini*, for it wants the extreme modifications of the antennæ of *Anobiini* and of *Dorcatomini*, and the highly peculiar sternal developments of the latter group, and is distinguished from them only by these negative characters. The two Hawaiian genera of *Xyletinini* will prove to be, as regards the *Anobiini* and *Xyletini*, very synthetic, and they thus form a very striking contrast to the extremely specialised *Cœlosternus*. And I anticipate these two genera will prove to be the real autochthones (adopting a term of the regretted Wollaston's) of the Hawaiian *Anobiidæ*, and that other allied species will be discovered.

XYLETOBIUS, n. g.

*Xyletobius marmoratus*, n. s.

Angustulus, dense subtilissime tomentosus, rufo-fuscus, pubescentia cinereo-variegata, antennarum basi, femoribusque testaceis; elytris subtiliter striatis, striis plus minusve sinuatis. Long. 3¼ mm.

Of rather narrow, moderately elongate, form; with elongate slender antennæ, which moreover are but feebly serrate internally; the 1st and 2nd joints of these members are yellow, the 4th to 11th infuscate, from the 3rd to the 10th each joint is a little longer and more slender than its predecessor, the 11th is slender and distinctly longer than the 10th. The head is fuscous, quite dull, covered with obscure tomentum, and with no visible sculpture. The thorax is strongly transverse, but little

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elongate in the middle, the sides slightly curved; both front and hind angles distinct, although a little rounded; it is of an obscure reddish colour; the surface dull and without sculpture, but covered by dense tomentum, which towards the sides is of an ashy colour. The elytra are rather elongate, and bear a much variegated tomentum; they are very finely but distinctly striate; the striæ are not straight, but are a little irregular; except for the striæ they have no sculpture.

Beaten from dead branches of the Koa tree, at an elevation of 4000—5000 feet, on Haleakala, island of Maui, April and May, 1880.

*Xyletobius nigrinus*, n. s.

Niger, opacus, pube subflavescenti tenuiter vestitus, antennis sat elongatis, articulis intermediis serratis; elytris leviter inæqualibus, subtiliter sed conspicue striatis, striis leviter sinuatis. Long. 4 mm.

Antennæ a good deal longer than head and thorax, nearly black, even the 2nd joint is slightly angulate internally, and the following joints are more distinctly so, but the 5th joint shows a slight peculiarity in this respect, as its inner margin is somewhat obliquely truncate; the 9th and 10th joints are each just distinctly a little longer and more slender than its predecessor, and are a good deal longer than broad; the 11th joint is slender, distinctly longer than the 10th. Head very sparingly pubescent, and rendered a little rough by fine extremely flat tubercles or granules. Thorax a good deal longer in the middle than at the sides, both front and hind angles a good deal rounded, and the former much deflexed; the surface is conspicuously tomentose or finely pubescent, and towards the sides some excessively fine granules may be distinguished. Elytra rather deeply striate, the striæ not punctate; at some distance behind the base each has an oblique transverse depression, and, in passing through this, the striæ are a little sinuate; the tomentum is not dense, and seems to be more scanty towards the apex. Other sculpture than the striæ is excessively indistinct. The legs, including the tarsi, are black. The middle coxæ are distinctly separated.

Found by beating dead branches of a tree whose name is unknown, at an elevation of 4000—5000 feet, on Haleakala, island of Maui.

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*Xyletobius oculatus*, n. s.

Angustulus, pube subtilissima cinerescente vestitus, niger, antennis elongatis; elytris leviter striatis, parum inæqualibus. Long. corp. $2\frac{2}{3}$, antenn. $2\frac{1}{3}$ mm.

The antennæ are very elongate, being but little shorter than the whole length of the body; from the 4th joint onwards they are distinctly serrate internally, but each joint becomes longer and more slender than its predecessor, so that the serration of the three or four terminal joints is very obscure. The head is very obsoletely granulate. The front angles of the thorax are greatly deflexed; its surface is dull and very finely tomentose, with a very pale minute pubescence, and is almost without sculpture. The elytra are rather finely striate, and only indistinctly transversely impressed in front of the middle, and the striæ but little distorted; they bear a very fine ashy tomentum; just beyond the middle of each wing-case this tomentum becomes slightly flavescent. The legs, including the tarsi, are quite black. The middle coxæ nearly contiguous.

Mr. Blackburn found this species on Mauna Loa, Hawaii, at an elevation of about 4000 feet, by beating dead branches of trees.

I subjoin the characters, so far as I have been able to ascertain them, of these three species, for which I have made a new generic name.

Antennæ 11-jointed, elongate and slender, only very feebly serrate internally, the apical three joints not strikingly different from the preceding ones. Head small, only about half as broad as the prothorax, not very large, but strongly prominent. Terminal joint of the four palpi slightly dilated, the apex truncate, the outer apical angle slightly prolonged, so as to be minutely acute. Thorax transverse, its front angles but little prolonged downwards, its sides strongly trenchant; prosternum but little modified for the inflection and protection of the head; the front coxæ contiguous. Mesosternum ordinary, middle coxæ but little separated. Tibiæ but little elongate, slender, not carinate or angulate. Tarsi getting stouter towards the apex, so that the apical joint is decidedly broader than the basal one; this latter at least twice as long as the second joint.

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This genus is allied to *Xyletinus*, although it is in appearance more like the *Anobiini*; its form is narrower, its head smaller, and the capacity of contraction of the front parts less; the antennæ are elongate, and the tarsi are formed more as in the true *Anobiini*. From *Holcobius* it differs by the nearly simple terminal joint of the palpi.

HOLCOBIUS, n. g.

*Holcobius granulatus*, n. s.

Sat elongatus, parum latus, subopacus, subnudus, niger, antennis testaceis, pedibus piceis; prothorace crebre granulato; elytris striatis, scabriusculis. Long. 6—6½ mm.

Palpi and antennæ yellow, the latter moderately long and slender, feebly serrate internally; each joint, from the 6th to the 9th, a little longer and more slender than its predecessor; 10th scarcely longer than 8th, but decidedly more slender; 11th distinctly longer than the 10th. Head conspicuously granulate. Thorax transverse, moderately longer in the middle than at the sides; the hind angles very broadly rounded, the base only feebly sinuate on each side; the front angles greatly deflexed, but when seen from the side not in the least rounded, but slightly acute; the surface evenly and densely covered with conspicuous granules, almost destitute of pubescence. Elytra striate; the striæ near the apex not punctured, but towards the base, especially at the sides, more or less distinctly punctate, the interstices rendered rough by transverse marks. Middle coxæ but little separated.

Found in decayed trunks of the Koa tree, at an elevation of 4000—5000 feet, on Haleakala, island of Maui.

*Holcobius glabricollis*, n. s.

Sat elongatus, subcylindricus, supra glaber nitidus, subtus tenuissime pubescens, niger, antennis rufo-testaceis, pedibus rufescentibus, femoribus obscurioribus; prothorace fere lævigato, pernitido; elytris seriatim, fere grosse punctatis. Long. 6 mm.

Antennæ yellow, rather longer than head and thorax, not slender, slightly serrate internally, 3rd to 6th joints differing little from one another in length; from the 7th

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onwards each becomes a little longer than its predecessor, but the 10th is not longer than the 9th, is indeed even perceptibly shorter than it; 11th joint distinctly longer than 9th. Head shining black, almost without sculpture and pubescence. Thorax transverse, not much prolonged in front, the anterior angles greatly deflexed, not acute, even just a little rounded owing to a slight curve of the front margin; the hind angles very broadly rounded, the base very feebly sinuate on each side of the middle, the surface very polished and shining, with a very obsolete puncturation. Elytra very coarsely punctate, the coarse punctures placed on indistinct striæ, and at the apex, especially towards the sides, the striæ become more distinct and the punctures more indistinct. Legs obscure yellow, the femora darker.

This species is remarkable among the *Anobiadæ* by reason of its polished, glabrous upper surface.

Two specimens of this distinct species were cut out of a Koa tree, at an elevation of about 1000 feet, near Honolulu.

*Holcobius major*, n. s.

Nigro-fuscus, subtilissime pubescens, parum nitidus, antennis elongatis, fusco-rufis; prothorace transversim subquadrato, dense pubescens, versus angulos anteriores tenuiter granulato; elytris tenuiter pubescentibus, profunde striatis, striis parum distincte punctatis. Long. 10½ mm.

Of robust, parallel, elongate form. Antennæ elongate and slender, dusky red, feebly serrate internally; the outline of the outer margin of joints 5—10 slightly emarginate or concave; 9th joint slightly longer than the 8th; 10th more slender and a little shorter than 9th; 11th slender, about as long as 9th. Head finely granulate, and with a scanty, very delicate pubescence or tomentum. Thorax transversely subquadrate, but little longer at the middle than at the sides, these presenting a sharp edge till just before the front angles, when the edge ceases, so that the front angles appear notched; the hind angles rounded, but not greatly; the surface with a not very dense, but very fine, tomentum, and towards the front angles with fine, not very numerous, granules. Elytra deeply striate; the striæ indistinctly punctured



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or subcrenate; bearing a scanty, very fine, pubescence. Legs very obscure red.

This species is highly remarkable from its large size and the structure of the front angles of the thorax.

Two specimens of this insect were dug out of a Koa trunk by Mr. Blackburn, on Haleakala, Maui, at an elevation of 4000 or 5000 feet, April, May, 1880.

The following are the characters that have induced me to propose a new generic name for the preceding three species; they are drawn more specially from an examination of *H. granulatus*:—

Antennæ 11-jointed, elongate, but to a variable degree, feebly serrate internally, the three terminal joints longer than broad, scarcely angulate internally. Terminal joint of each of the four palpi dilated, securiform, but with the outer extremity emarginate. Head of moderate size; eyes convex. Prothorax with even surface, its edges trenchant, beneath but little hollowed for the inflexed head, front angles nearly rectangular. Front coxæ contiguous. Mesosternum ordinary. Legs elongate, but tarsi stout, and only moderately long; tibiæ elongate, subcylindric, simple, not in the least angulate. Ventral segments five, free, the basal one slightly lobed or produced backwards in the middle.

This genus comes near to *Metholcus*, but the antennæ are elongate and less serrate, the head smaller, the prothorax less modified for receiving and covering the head; and the tibiæ are quite simple, not angulate externally.

### Mirosternus,* n. g.

*Mirosternus punctatus*, n. s.

Dense, subtiliter æqualiterque punctatus, subtilius pubescens, opacus, nigricans, antennis pedibusque piceis, illis clava fere nigra, his tarsis dilutioribus, capite subtus rufescente. Long. $2\frac{1}{3}$ mm.

Antennæ with the basal joints piceous, the three terminal ones nearly black, these very elongate, the first of them broad, and much dilated inwardly, but its most prominent angle obtuse; the second of them elongate, and angulate internally, but still slender; the apical

* On p. 517, lines 3, 4, 6, 11 and 21, this name is printed *Cœlosternus* in error.

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joint also very elongate and rather slender, but distinctly thickened from the base to the apex. Head sparingly punctate, piceous, paler beneath; eyes very convex and prominent. Thorax piceous, very finely punctate, seen from above apparently narrower in front; the anterior angles acute, but very deflexed. Elytra densely, very evenly and finely, punctured, densely and finely pubescent, dull. Breast shining, but little punctate. Ventral segments densely punctate.

Found by beating dead branches of trees on the Waianae mountains, Oahu, at an elevation of 2000 or 3000 feet, July, 1877. (No. 331).

*Mirosternus obscurus*, n. s.

Dense, subtiliter æqualiterque punctatus, subtilius pubescens, opacus, picescens, antennis pedibusque obscurioribus. Long. $2\frac{1}{3}$ mm.

Antennæ red, with the small intermediate joints yellow, the club of moderate length, its first joint dilated internally, triangular, the following joint rather narrower, the terminal joint still more slender, and of an elongate, narrow, oval form. Head finely punctate. Thorax closely and finely punctate, as are also the elytra. Legs red.

This is similar in puncturation to *C. punctatus*, but is paler in colour, and has the antennæ very much smaller.

The habitat is the same as that of *C. punctatus*. (No. 332).

*Mirosternus muticus*, n. s.

Nigricans, capite antennis pedibusque piceo-rufis, tenuiter pubescens, subnitidus, elytris ad apicem dense punctatis. Long. $2\frac{1}{2}$ mm.

Antennæ reddish, with the club darker, the joints of the latter similar in form to those of *C. punctatus*, but rather broader and shorter, and the terminal joint more obliquely truncate at the extremity. Head impunctate, except at the margins; thorax almost impunctate, but very distinctly pubescent. Elytra densely punctate at the extremity, but the puncturation in front becomes obsolete, and there is thus left at the shoulder a large glabrous shining space. Legs reddish.

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The antennæ in the two individuals before me have the joints of the club similar in form, but in one of them—no doubt the male—they are larger, being both broader and longer, than in the other. Metasternum without carina.

Mr. Blackburn discovered this species at an elevation of between 2000 and 4500 feet, on Mauna Kea, and Mauna Loa, Hawaii, by beating dry branches of trees. (No. 266).

*Mirosternus carinatus*, n. s.

Niger, parum nitidus, obsolete punctatus, tenuiter pubescens, antennarum basi pedibusque rufo-obscuris, tarsis dilutioribus; metasternum in medio anterius alte carinatum. Long. 2½ mm.

This species is distinguished essentially by the acutely carinate metasternum; it much resembles *C. punctatus*, but the puncturation of the elytra is much less; this is fine throughout, and is even scanty and obsolete, except at the extreme base and at the apex, at both of which spots it is denser than elsewhere. The joints of the antennal club are very largely developed, and are similar in shape to those of *C. punctatus*, except that they are not quite so long in proportion to their breadth.

Beaten from dead branches of the Koa tree on Haleakala, Maui, at an elevation of 4000 or 5000 feet, April, May, 1880. (No. 403).

*Mirosternus glabripennis*, n. s.

Piceus, elytris nigricantibus, antennis pedibusque rufis, tarsis dilutioribus; capite thoraceque conspicue pubescentibus sed vix punctatis; elytris glabriusculis, pernitidis; metasterno posterius in medio argute canaliculato, antennis carina elongata, parum elevata. Long. 2½ mm.

This species is readily distinguished by the shining and polished elytra, forming a striking contrast to the conspicuously pubescent thorax. The club of the antennæ is rather more than moderately developed. Although the elytra are very polished, they have, along the suture at the apex, a very fine and scanty pale pubescence. The metasternum is not deeply hollowed along the middle, but has behind a very distinct channel,

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and in front of this a rather obscure elongate carina. The two individuals before me are no doubt male and female, as in one of them the antennal club is rather more developed than in the other; this is no doubt the male, and it has moreover the metasternum a little more deeply hollowed than the other individual.

Found at an elevation of about 1000 feet on the Waianae mountains, Oahu, by beating dead branches of trees.

*Mirosternus debilis*, n. s.

Rufo-obscurus, antennarum basi pedibusque rufis, illarum clava fusca; capite thoraceque pubescentibus, obsoletissime punctatis; elytris subtilius punctatis et pubescentibus, pone basin transversim subglabris; metasterno in medio anterius minus alte carinatum. Long. 2 mm.

The club of the antennæ is here of only moderate size; the intermediate joints appear to be only five in number, thus making in all only ten joints. The head and thorax are finely but distinctly pubescent, the latter moderately closely, very finely, but quite visibly punctate. Elytra very delicately pubescent, with a very fine but rather dense puncturation on the apical portion; in front of this quite sparingly punctate, but with the puncturation at the base again more distinct. Metasternum broadly and deeply impressed along the middle, and in front with a slightly elevated but quite distinct carina.

The habitat is the same as that of the preceding species and *C. punctatus*. (No. 334).

*Mirosternus bicolor*, n. s.

Nigro-testaceus, antennarum basi rufo, pedibus elytrisque testaceis, his circa scutellum infuscatis apice late nigro, glabris, nitidis; capite thoraceque tenuiter pubescentibus; metasternum in medio anterius alte carinatum. Long. 2 mm.

Antennæ pale red, with the club infuscate; the first joint of the latter large, but not angulate internally, its inner margin, though shorter than the outer, being truncate. Head and thorax of an obscure red, or pitchy colour, very finely pubescent, but with no visible

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puncturation. Elytra shining, and without pubescence, yellow, infuscate at the base, and broadly black at the apex. Legs yellow, slender.

In this species the small intermediate joints of the antennæ are very difficult to count, and I have not distinguished more than four, in which case there would only be nine joints in all.

The individual described was found on the Waianae mountains, Oahu, by beating dead branches of trees, at an elevation of 2000—3000 feet, in July, 1877, in company with *C. punctatus* and other species. (No. 333).

I have investigated the characters of the seven species just described only in a very imperfect manner: the structure of these insects renders them very difficult to expand, and when expanded they are very fragile, and their pubescence rubs off with great facility; hence the single individual (or in some cases two) of each species has necessarily been subjected to but little manipulation. I have not been able to dissect any specimen, and the peculiar structure cannot be ascertained with precision in the absence of such process; but, so far as I can see the characters, they are these:—

Antennæ 11-jointed; basal joint very large, and shaped and curved in such a way as to adapt it exactly to the small hollow under the eye when the antennæ are withdrawn under the head; joints 3—8 small, and subconnate *inter se*; the articulation between the 3rd and 4th joints particularly indistinct; joints 8—11 forming a very elongate and loosely articulated club; the 9th and 10th more or less dilated and angulate internally. Head much narrower than the prothorax, with very convex circular eyes, which are not at all divided. Prosternum very small, and greatly hollowed for the accommodation of the inflexed head; the front coxæ separated by a moderate distance. Mesosternum entirely concealed, perpendicular in direction, or rather deeply hollowed by being thrust back over the metasternum, so that a large hollow is formed for the reception of the apical joints of the antennæ; middle coxæ very widely separated. Metasternum protuberant in the middle in front, marked on each side by a very deep transverse furrow, which is curved forwards in the middle, and serves to receive the middle leg; the hind part more or less deeply impressed

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longitudinally. Basal ventral segment forming an elevated longitudinal process in the middle between the hind coxæ. Front tibiæ sharply carinate externally.

The capability of packing up the limbs and head reaches its extreme in this genus; and they look, and no doubt roll about, like little black or dark seeds when their members are thus packed up.

## AGLYCYDERIDÆ.

### PROTERHINUS, *Sharp.*

With regard to this genus I have to make a correction of some importance. When I described it (Trans. Ent. Soc. 1878, p. 20), I was of opinion that the individuals in which the head was produced into a distinct beak were of the male sex, and so described them without any hesitation. Mr. Blackburn had, however, a conviction that the rostrate sex was the female, and Dr. Leconte's opinion that the genus should without doubt be referred to the Rhyncophorous series tended to confirm Mr. Blackburn's idea, it being the rule in that series that the head of the female is more decidedly rostrate than it is in the other sex. Accordingly, when making the second set of descriptions of species of the genus (Trans. Ent. Soc. 1879, p. 95, *et seq.*), I refrained from committing myself to any opinion on the subject by speaking of the rostrate and unrostrate sex, without saying anything of the male or female. Since then Mr. Blackburn has transmitted to me additional specimens of *P. vestitus*, and, by dissecting an unrostrate individual, I have obtained satisfactory evidence of its being the male. In the present paper I therefore speak of the rostrate sex as the female, and I ask that it shall be noted that in my first paper, *loc. sup. cit.*, I reversed the sexes. I am now able to describe six additional species of this interesting genus, and anticipate that others still unknown exist in the archipelago.

#### *Proterhinus hystrix*, n. s.

Angustulus, elongatus, rufo-ferrugineus, haud squamosus, setulis erectis vestitus; prothorace subquadrato, antrorsum constricto, lateribus setulis elongatis conspicuis armatis, fortiter denseque punctato; elytris elongatis, humeris liberis, parum elongatis, fortiter punctatis, setis elongatis, erectis munitis. Long. 3 mm.

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Antennæ rather slender; 2nd joint elongate, fully as long as and rather thicker than the 3rd; 9th joint a good deal stouter and longer than the 8th. Thorax appearing nearly straight at the sides, but constricted before and behind, very coarsely punctate, the punctures causing the sides to appear serrate; the sides and front armed with elongate setæ, the surface with some shorter scanty curved depressed setæ. Elytra coarsely punctate, and bearing numerous elongate setæ, and besides these with some depressed short setæ which replace, to a certain extent, the squamosity of other species.

I have a pair of this species before me; the female differs from the male, not only by the rostrate head, but also by having the surface dull and the sculpture more indefinite. It is allied to *P. blackburni*, but is very much larger and more elongate.

Mr. Blackburn informs me this species is "not very rare" on the mountains of Hawaii.

*Proterhinus dispar*, n. s.

Rufo-niger, parcius squamosus, elytris setulis albidis, brevibus, erectis parce minutis; prothorace impresso, impressione anteriore magno; elytris parce fortiter punctatis, humeris fere rectangularibus, basi rufo. Long. mas 4, fem. 3 mm.

Antennæ largely developed, nearly black; the 9th joint a good deal broader and longer than its predecessor. Eyes very prominent. Thorax a good deal rounded at the sides, and with a distinct, abruptly constricted anterior portion; just behind the middle, on each side, there is a rather large impression, and a very large one in front, in the middle; the surface is coarsely punctate, and apparently but little squamose. The elytra also are but little squamose, and their erect setæ are not numerous, and are rather short; the shoulders are just a little prominent, and so are only slightly acute; the colour is black or pitchy red, with a large patch of dark red at the shoulder of each; they are quite dull, and bear coarse deep punctures. The front coxæ are very widely separated.

The male is twice the size of the female, and has the front of the head produced into a short, broad, punctate, not shining, rostrum, and its antennæ are more elongate,

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and its legs are very thick, the femora being much incrassate. The female has the front of the head produced into a moderately long polished rostrum. I have before me only a single pair, of which the female is not in good condition, and I do not know whether the great sexual disparity is a constant character of the species. It is somewhat allied to *P. vestitus*.

Mr. Blackburn discovered this species by beating trees in a forest behind the Palolo Valley, Oahu.

*Proterhinus gracilis*, n. s.

Angustulus, gracilis, nigricans, pedibus rufo-nigris, antennarum basi tarsorumque lobis rufis; prothorace tri-impresso; elytris obscure rufo-variegatis, parum squamoso-maculatis, setulis brevibus erectis sparsim adspersis, humeris antrorsum acutis. Long. $2\frac{1}{3}$ mm.

♀. Antennæ about as long as from the tip of rostrum to base of thorax, black, with the basal joint red, and the 2nd joint more obscurely red; this is also rather elongate, being but little shorter than the 3rd; the three apical joints not greatly different from the others. Eyes but little convex. Thorax slender, rather longer than broad, black, coarsely but indistinctly sculptured, sprinkled with distant, depressed white setæ; with three rather indistinct impressions, a large one in the middle in front, and one on each side about the middle; the anterior part is not abruptly narrowed, so that there is little appearance of constriction. Elytra narrow, especially at the shoulders, which are acute and prominent, very coarsely, but (in this unique individual) indistinctly punctate, of a dark fuscous or blackish colour, dull, with some indistinct red marks, and small patches of white squamosity, bearing also a few rather short white setæ. Femora nearly black; tibiæ obscure red; the lobes of the tarsi distinctly paler.

This insect is narrower in form than most of the other species; it is perhaps most similar to *P. debilis*, but is abundantly distinct therefrom by the shape of the 2nd joint of the antennæ, by the more slender thorax, with more distinct impressions, and by the acute humeral angles of the wing-cases.

Found on Mauna Loa, Hawaii; elevation about 4000 feet.



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*Proterhinus angularis*, n. s.

Angustulus, nigricans, rostro, antennis pedibusque plus minusve rufescentibus, parum squamoso-variegatus; elytris macula pallida squamosa ad humeros, setulis elongatis erectis crebre adspersis, fortiter punctatis, humeris liberis, antrorsum sat prominulis. Long. 2½—3 mm.

♀. Antennæ not very long; the 9th joint not greatly different from the 8th. Eyes moderately large. Thorax elongate; the anterior part not abruptly constricted; behind the front with a deep distinct impression; the surface coarsely punctate, with only a very scanty clothing of setæ. Elytra rather elongate and narrow, a good deal emarginate at the base, so that the humeral angles are distinctly prominent, but not elongate; they are dull, coarsely punctate, and have a very conspicuous patch of pale scales at the humeral angles, besides some more or less distinct squamous patches near the extremity, and with rather numerous, elongate, erect setæ. Legs apparently varying from red to black, with the tarsi red.

I have seen only the female. The species appears allied to two very distinct ones, viz., *P. nigricans* and *P. longulus*; it differs from the former by the more slender elongate form, and more angulate shoulders to the elytra, and by the elongate setæ. In form it approaches to *P. longulus*, but the eyes are larger, the thoracic impression conspicuous, and the setæ of the elytra elongate. The conspicuous humeral patch of squamosity will, I think, assist much in the identification of the species.

Beaten from trees on a mountain near Honolulu.

*Proterhinus punctipennis*, n. s.

Sat angustus, rufescens, pectore abdomineque nigricantibus, antennis apicem versus obscurioribus; prothorace lateribus rotundatis anterius parum constrictis, ante medium parum discrete foveato, obsolete punctato; elytris vix maculatim squamosis, punctis magnis et profundis, et setulis brevibus erectis adspersis. Long. 2⅔ mm.

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Antennæ stout, not elongate; 2nd joint thick, stouter than the 3rd, and but little shorter than it; 9th distinctly longer and thicker than 8th. Thorax evenly rounded at the sides, and so without constricted anterior portion; behind the front margin, in the middle, with a large but indefinite impression; the surface dull, without distinct puncturation, but with a good deal of squamosity, which is not arranged so as to form any pattern. Elytra rather elongate and narrow; the shoulders but little disengaged from the thorax, and not prominent; the surface red, with a dark patch on each side, with deep, extremely large, punctures, with a fine irregular squamosity, and forming definite marks, and with short erect pale setæ. Legs thick, pale red.

In the male the front of the head is rather elongate, and the antennæ are rather stouter than in the female, the 1st and 2nd joints especially being thicker.

The species is remarkable for the coarse puncturation of the elytra. It is allied to *P. oscillans*, but is much larger and more elongate, and has the antennæ thicker, and I should think it is most probably distinct.

This was taken on the island of Maui, I believe.

*Proterhinus validus*, n. s.

Major, suboblongus, piceus, supra cum pedibus ochraceo-tomentosus, setulis erectis munitus; oculis perprominulis; prothorace conspicue trifoveolato, elytris inæqualibus, fortiter punctatis, humeris antrorsum prominulis. Long. $4\frac{3}{4}$—$5\frac{1}{2}$ mm.

Antennæ short, much clothed with hairs and setæ; 2nd joint greatly shorter than 3rd; 8th distinctly shorter than 7th; the three terminal joints each thicker but not much longer than the 8th. Head closely and roughly tomentose. Thorax large, much narrowed in front; the narrow front part elongate, but not abruptly separated from the posterior portion; on each side, just behind the middle, with a very large and distinct fovea, and the middle, behind the front margin, very broadly but less definitely impressed; the surface clothed with curved setæ, some of which, more especially those about the front and sides, are elongate and suberect, while others become so short and depressed as not to differ from tomentum. Elytra large; the shoulders prominent in front; at the base on each side, some distance from

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the scutellum, there is an elevation, and more externally behind this a broad, not very definite, longitudinal elevation, the front of which extends towards the shoulder without reaching it; their surface is coarsely punctate, and has much squamosity, which is especially dense on the most elevated portions, and behind the termination of the longitudinal elevation, the sutural portion (or rather the space external to the suture) is the most bare, but it possesses some rather indefinite patches of clothing; the surface towards the sides and apex is hispid, with erect setæ. The legs are stout, much clothed; the lobes of the tarsi extremely large.

In the male the front of the head is a good deal swollen on each side over the insertion of the antennæ, and this dilatation causes the anterior part to appear more rostrate than in the corresponding sex of other species.

This remarkable insect is very distinct from *P. Leconti*, the only other large species of the genus yet found.

Mr. Blackburn discovered it on Haleakala, Maui, in the bark of the Koa tree, but did not observe it at a less elevation than 4000 feet.

## CERAMBYCIDÆ.

### Clytarlus, *Sharp.*

Trans. Ent. Soc. Lond. 1878, p. 208.

### *Clytarlus pennatus*, n. s.

Testaceus, capite, abdominis basi tibiarumque quatuor posticarum apicibus fuscis, crebre pallido-cinereo squamoso; elytris in medio infuscatis ibidemque densius squamosis, post hoc macula denudata; prothorace anterius carinula arcuata valde elevata et pone medium aliis vix minus conspicuis; femoribus quatuor posterioribus cinereo-squamosis, duobus posterioribus ante apicem annulo lata denudata. Long. 10 mm.

Head reddish in front, shading into black on the vertex, bearing very numerous pallid elongate scales or setæ. Prothorax reddish, shading into black on the prosternum and round the coxæ, and at the front and hind margins, and bearing numerous pallid scales, which are less dense on the lateral portions; the middle is longitudinally elevated, but the elevation does not extend to

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the base, but is distinctly marked with transverse carinæ; the anterior of these forms an abrupt elevation; behind it the three or four next carinæ are very obsolete and indistinct, and behind the latter three others strongly elevated but very irregular; on each side of the middle longitudinal elevation there is an obscure depression, limited by a slightly curved elevation. Elytra yellowish, darker across the middle, and very narrowly black along the suture, clothed with numerous pallid scales, which do not extend, however, to the sides, and are more dense on the dark middle portion than elsewhere, and behind this with an extension inwards of the marginal denudation, nearly but not quite reaching the suture; their surface, where not covered with scales, is shining, and at the lateral margin is almost destitute of puncturation. The legs are not so elongate as they are in the larger species of the genus; the basal portion of the four hinder femora is slender, and is pale yellow and bare of scales, but the outer portions of these femora are a good deal incrassate, and are darker in colour and dull, and bear numerous pallid setæ or scales, the posterior one showing a conspicuous broad denudated patch just before the apex; the very slender yellow hind tibiæ become infuscate at the apex; and the basal joint of the hind tarsus is very elongate; it is also slightly curved, and of a paler tint than the apical joints. The breast is red, sparingly pubescent; the basal ventral segments dark in colour, quite smooth and shining.

The individual described is probably a male; its hind body is very much curved, but if straightened out would reach nearly (but not quite) to the apex of the elytra; the antennæ extend to about three-fourths of the lengths of the wing-cases.

A single individual has been communicated by Mr. Blackburn as No. 415; he discovered it with others on Haleakala, Maui, at an elevation of 4000 or 5000 feet, in April and May, 1880; the specimens were found on the trunk of a tree, species unknown, but which produces likewise *Proterhinus Lecontei*.

Mr. Blackburn informs me that the female differs only by possessing a rather larger hind body, and slightly less elongate antennæ.

The species is allied to *C. cristatus*, but abundantly distinct.

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*Clytarlus fragilis*, n. s.

Parvus, depressus, opacus, fuscus, cinereo-squamosus, antennarum, tibiarum femorumque basibus testaceis; elytris dense punctatis, fasciis tribus irregularibus squamosis, utrinque ad scutellum bullatis, basi summo pallidiore. Long. 4—5 mm.

Head shorter than in the other species, quite dull, but bearing numerous pale clay-coloured setæ (or very fine scales), which render its sculpture obscure. Thorax with a rather strongly elevated carina in front, and with two or three obscure transverse carinæ behind the middle; its surface is dull and densely punctate, but the sculpture is rendered obscure by the scales, or depressed setæ, with which it is clothed; these form a broad pale band on each side, and a less distinct one on each side near to the middle. The elytra are coarsely and densely punctate, dull, the external base paler than elsewhere; on each side of the suture at the base is a strongly marked elevation, and the surface bears pale scales, arranged so as to form three or four more or less indistinct, irregular transverse bands. The four posterior femora have an elongate slender pale portion, but their apex is abruptly clavate, the dilated portion being darker in colour; their tibiæ are extremely slender, infuscate towards the apex. The under surface is rather closely clothed, especially at the sides, with pale scales. The hind body (or abdomen) is rather broad, not curved, and reaches in the male nearly, in the female quite, to the extremity of the wing-cases. The antennæ are a good deal incrassate at the apex, and from the 3rd joint to the 10th each is distinctly shorter than its predecessor.

This species is the most extreme form in one direction yet discovered, and should be placed near *C. modestus*. It is remarkable for the elongation of the slender portion of the femora, and corresponding brevity of their dilated extremity.

Found in the Palolo Valley, Oahu, by beating dead branches of trees.

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## XXXIV. *On some South American* Coleoptera *of the Family* Rutelidæ. By Chas. O. Waterhouse.

[Read October 5th, 1881.]

The present paper has resulted from examination of some *Rutelidæ* collected by Mr. Buckley in Ecuador. Mr. Buckley brought several new species, and, while describing them, I have added a few which were already in the British Museum.

### Antichira, *Eschsch.*

A. All the following species have a very large scutellum; the mandibles with a well-marked notch on the outer edge; a long sternal process; and the larger claw to all the tarsi bifid. Species 1—12.

1. *Antichira modesta*, n. s.

Ovata, olivacea-viridis, nitida, fere lævis; thoracis lateribus subtiliter punctulatis, elytrorum humeris postice impressis, pygidio striolato. Long. 9 lin.

Very close to *A. prasina*, Burm., but differs in being a little shorter, of a rather darker green with dark reflections. The punctuation on the forehead, disk of the thorax, and scutellum is only visible with a rather strong magnifying-glass; the punctuation of the elytra is still finer, and can only be traced with difficulty. At the sides of the thorax the punctures are moderately distinct. The elytra have at the side below the shoulder a shallow oblique impression. The pygidium is strongly vermiculose-strigose, as in *A. prasina*.

*Hab.* Ecuador, Cuença (*Fraser*).

2. *Antichira sobrina*, n. s.

Oblonga, subdepressa, nitida, olivacea, ænescens; thoracis lateribus crebre punctulatis, pygidio crebre strigoso, tarsis nigris, gracilibus. Long. 9 lin.



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Allied to *A. chrysis*, but of quite a different colour. Dark olive-green, tinted with æneous; the colour is so dark that the insect appears black where the light does not shine on it. The punctuation on the forehead, disk of thorax, scutellum, and elytra is moderately close and distinct, but the punctures are as if made with a blunt point. The pygidium is closely and rather finely vermiculose-strigose, the sculpture below the segment much coarser; the penultimate segment of the abdomen below is smooth, the other segments have a line of punctures. The mesosternal process is long and thick, rather enlarged at the apex, and much curved over the anterior coxæ. The sides of the thorax are closely and finely punctured, but not quite so densely as in *A. chrysis*. The legs are less robust, and the tarsi much more slender; the larger claw of the anterior tarsi is about two-thirds the length of the claw-joint. Male.

*Hab.* Peru.

In the British Museum collection there is a species from Bolivia which I have no doubt is *A. concoloripes*, Blanch. *A. sobrina* is nearer to this than to *A. chrysis*, on account of the more slender tarsi, but it is of a totally different colour; and the sternal process in the Bolivian insect is more slender and acuminate.

8. *Antichira læta*, n. s.

Oblonga, convexa, nitidissima, æneo-virescens, cupreo fulgida; pygidio subtiliter punctulato, apice strigoso. ♂. Long. 11 lin.

Very close to *A. lucida*, Oliv., and similarly coloured. It is narrower; the clypeus is very thickly and much more distinctly punctured; the punctuation of the thorax and elytra is also more distinct, especially at the apex of the elytra. The pygidium is more conical, very finely, and not very closely, punctured; the apical margin distinctly strigose. The metasternum is smooth, with a few fine punctures at the side. The 2nd to 5th abdominal segments have well-marked oblique ridges, as in *A. lucida*.

*Hab.* Bahia.

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4. *Antichira Olivieri.*

*Cetonia splendida*, Oliv., Ent. i., 6, p. 75, pl. 4, f. 21.
*C. splendida*, Fabr., var., Syst. El. ii., p. 141.

The true *Cetonia splendida*, Fab. (Syst. Ent., p. 47) is of a shining brownish purple with blue reflections, with the sides of thorax and the entire elytra dark yellow. The "*Cetonia splendida*, Fab.," of Olivier is a more ovate species, bright green, with the sides of the thorax and elytra yellow. Fabricius, in his later work, calls it a variety of his species, but as it is quite distinct I propose to call it *Olivieri*.

Burmeister's description of *splendida* is taken from the British Museum specimens; he does not seem to have known Olivier's insect, of which there are now two examples agreeing perfectly with the figure and description.

5. *Antichira pantochloris*, Blanch.

M. Blanchard (Cat. Mus. Paris, p. 205), compares this to *A. splendida*, and states that it is broader, and has the thorax broader and entirely green. I think that there can be little doubt that M. Blanchard is speaking of *A. splendida*, Olivier, and not the Fabrician species, as there is in the British Museum collection a species which differs from *A. splendida*, Ol., in the way he mentions. If I have rightly identified his species, the character "pygidio fortiter striato" will probably only apply to the female; two male examples, presumably of the same species, have the pygidium punctured, and only strigose on the margins.

6. *Antichira lævicollis*, n.s.

Breviter oblonga, convexa, polita, æneo-cuprea, subtus cuprea; elytris brunneo-flavis, pygidio longe piloso. Long. 9½ lin.

Very near *A. clavata*, Fab. in general form and colour, but it is shorter and more convex, and almost entirely without any sculpture whatever on the upper surface; only on the sides of the thorax some delicate punctures may be seen. The pygidium is vermiculose-strigose,



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beset with long pale hairs, as also the femora and under side of the insect. Male.

*Hab.* Minas Geraes, Brazil.

7. *Antichira tetradactyla*, Linn.

"Ater, lucens, lævis." "Jamaica." Linn., Mant. Plant., p. 530.

*Scarabæus tetradactylus*, Linn., Mant. Plant., p. 530.
*S. tetradactylus*, Linn., of the Linnean Collection.
"*S. major, splendens*," Sloane, Hist. Jamaica, ii., p. 205, pl. 237, f. 2.
*Cetonia tetradactyla*, Fabr., Syst. El. ii., p. 151.
*C. tetradactyta*, Fabr., of the Banksian Collection.
*Macraspis melanaria*, Blanch, Cat. Mus. Paris, 1850, p. 206.
"*M. tristis*, Casteln.," Burm., Handb. iv., 1, p. 355.

Burmeister says that he thinks Sloane's insect should be referred to *M. tristis*, but he does not seem to have noticed that Linné himself refers to Sloane's species in his description of *S. tetradactyla*.

There can be no doubt that *S. tetradactytus*, L., is *M. tristis*, Burm., but it is possible that *M. tristis*, Casteln. (Hist. Nat. ii., p. 117) may be distinct; there is in the British Museum a specimen named *M. tristis*, Casteln., from Guadeloupe, which differs somewhat from the Jamaica specimens of *M. tetradactyla*, Linn., in having impressed lines on the elytra, and Castelnau's description "élytres avec quelques stries longitudinales, lisses" agrees with this.

8. *Antichira aterrima*, Dejean, MS.

Under this name there is, in the Museum collection, an example which appears to be distinct from *A. tetradactyla*, L. It differs in being more elongate and more ovate, and especially in having the thorax regularly narrowed from the base to the front; not in the least angular at the sides.

*Hab.* Mexico.

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9. *Antichira dichroa*, Mann.

*Macraspis dichroa*, Mann., Nouv. Mém. Mosc. i., p. 50, pl. 2, f. 4.

*M. tetradactyla*, Burm. (nec Linn.), Handb., v., 1, p. 354.

*Hab.* Brazil, Ega, &c.

This common species having always been regarded as *M. tetradactyla*, L., appears to have no name now available for it but that given to the reddish variety of Mannerheim; and, not being able to refer to the original description, I am obliged to accept this name on the authority of a specimen named by the late Mr. Adam White, and the fact that Burmeister gives *M. dichroa* as a variety of his *M. tetradactyla*.

10. *Antichira cribrata*, n. s.

Atra, creberrime evidenter punctata; thoracis lateribus confertim subtilius punctulatis, vel alutaceis. Long. 11 lin.

Very close to *A. dichroa*, Mann., but rather larger, and more parallel; but it is especially distinct by the sculpture being throughout stronger, and the punctures are more clearly defined and separated. The sternal process is, moreover, much more enlarged at the apex (viewed laterally), and the lower part is more forward than the part next the anterior coxæ; in *A. dichroa* it is truncate, more at a right angle.

*Hab.* Monte Video; Chili?

11. *Antichira gagatina*, n. s.

Nigra, nitida; thoracis lateribus dense alutaceis, disco, scutello, elytrisque subtilius punctulatis. Long. 10½ lin.

Rather narrower and more parallel than *A. dichroa*. The sculpture of the thorax is similar, but the punctuation of the elytra is much less close, the punctures being very fine, well-defined, and separated. The sternal process is very slender before the much-enlarged apex. The elytra have a very slight æneous tinge in some lights, and the thorax is slightly pitchy.

*Hab.* Brazil; Rio Grande?

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12. *Antichira Desmarestii*, n. s.

Oblonga, parallela, niger, nitidissima; thoracis angulis anticis sat crebre subtiliter punctulatis, angulis posticis flavis, pygidio subtiliter striolato. Long. 8½ lin.

Very close to *A. variabilis*, Burm. Burmeister places this species in a different section from his *A. trifida*; but as both species vary very much in colour, it is extremely difficult to distinguish them, except by the sternal process, which in *A. trifida* is rather thick, and not very much enlarged at the apex, whilst *A. variabilis* has this process slender, more curved, and clavate at the apex. The form which I now propose to call *A. Desmarestii* is nearest to *A. trifida*, but has the sternal process more slender and more acuminate at the apex.

One male example has the pygidium margined at the apex with dull yellow; the female has a yellow spot on each side; a female example from New Grenada has the pygidium black.

*Hab.* Ecuador (*Buckley*); New Grenada.

B. Scutellum never more than one-third the length of the elytra, often shorter; the other characters as in Section A. Species 13—17.

13. *Antichira polita*, n. s.

Oblonga, convexa, nitidissima, viridi-ænea, cuprascens; elytris striis lævissime impressis atque subtilissime punctulatis, scutello parvo. Long. 11 lin.

Closely resembles *A. lucens* in general form and appearance, and might be mistaken for it, except for the small scutellum, which only measures four millimetres in length. Front of the head and the clypeus closely and rather strongly punctured. Thorax rather strongly rounded at the sides posteriorly, extremely delicately punctured, the punctures a little more close at the sides than on the disk; the base moderately sinuate on each side of the basal lobe, which is quite straight next the scutellum. Elytra to nearly the middle parallel, but then somewhat arcuately enlarged; smooth (or with only a few extremely delicate punctures) except at the apex, which is strongly punctured. The pygidium is

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closely vermiculate-striate. Sternal process very elongate-triangular, rather inflated at the apex. The sides of the metasternum strongly vermiculate-striate. Female.

*Hab.* New Grenada.

14. *Antichira generosa*, n. s.

Oblonga, convexa, nitida, picea; capite scutelloque cupreis, thorace (basi flexuoso) elytrisque flavis, his striato-punctatis, interstitiis crebre punctulatis, apice rugoso-punctato. Long. 8 lin.

Head very thickly and rather strongly punctured, especially in front, the forehead impressed; clypeus very short, finely rugulose. Thorax yellow, with green tints, 4 mm. long in the middle, broadest at the base, not narrowed till near the middle, thence to the front very obliquely narrowed; finely, very distinctly but irregularly, punctured on the disk, the sides for a considerable space densely punctured; the base flexuous, strongly sinuate on each side of the middle lobe, which is broad and truncate. Scutellum thickly and finely punctured, moderately acute at the apex, 3 mm. long, 3¼ mm. broad at the base. Elytra parallel at the sides, obtusely rounded at the apex, very convex; with lines of rather strong punctures, the interstices thickly and moderately strongly punctured; apical callus very slightly prominent, the apex beyond this closely and strongly punctured; the margin below the shoulders quite simple and not incrassate. Pygidium very densely, transversely rugulose, pilose. Sternal process not very strong, somewhat acuminate.

*Hab.* Cayenne.

15. *Antichira substriata*, n. s.

Testacea, ænescens, supra virescens, oblonga, depressa; elytris crebre evidenter punctatis, striatis. Long. 9½ lin.

Head moderately thickly and finely punctured. Thorax broad and transverse, moderately convex, shining pale green, with yellowish reflections, especially at the sides, finely punctured on the disk, rather strongly and moderately closely at the sides; the anterior angles scarcely

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prominent, the sides rather strongly rounded, not angular in the middle; the posterior angles obtuse; the base with the notch on each side of the basal lobe strongly margined, the basal lobe itself arcuately emarginate next the scutellum. Scutellum triangular, green, narrowly tipped with coppery, very delicately punctured, not very acute at the apex, 5 millimetres long. Elytra at the base scarcely as broad as the thorax, rather wider behind, depressed, obscure yellowish, with green reflections, rather strongly and closely punctured, the punctures having a tendency to become confluent transversely; each elytron has four pairs of impressed lines, the third pair rather obscure. The pygidium is very strongly, not very closely, vermiculate-striate, with a round fovea on each side of the base. The sides of the metasternum are very closely (and rather vermiculate) strigose, the sides of the abdomen very finely so. The sternal process is long, gently curved, not very thick, narrow, and not inflated at the apex, the apex itself almost pointed. Female.

*Hab.* Para.

This species is allied to *A. tæniata*, Perty, having the base of the thorax similarly constructed, the deep notch on each side of the basal lobe having an acute point next the basal angles of the scutellum. It is much more oblong in form, and quite differently coloured.

16. *Antichira fulgida*, n. s.

Oblongo-ovata, leviter convexa, nitida, viridi-ænea, cupreo et aureo-splendens; elytris striatis, et crebre punctatis. Long. 15 lin.

General build of *A. chloroptana*, Burm., but with the thorax less narrowed anteriorly. Head and clypeus moderately thickly and distinctly punctured. Thorax very delicately and not very closely punctured, the punctures more distinct at the sides; the base has a rather sudden small sinuosity on each side of the basal lobe (the margin at this sinuosity slightly depressed), the basal lobe gently emarginate. Scutellum broad at the base, distinctly inclined to cordiform, not very acute at the apex, 7 millimetres long, extremely delicately punctured. Elytra very distinctly and rather closely umbilicate-punctate, the punctures confluent at the

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apex; each elytron has about seven impressed lines, those towards the sides somewhat obscure. Pygidium vermiculate, rugose at the apex. Sternal process very long, thick, slightly arched, not inflated at the apex. Sides of the metasternum closely vermiculate-striate, the abdomen much more finely so. Female.

*Hab.* Peru?

All the surface of this insect, besides the punctuation described, is very densely and excessively finely punctured.

17. *Antichira sulcipennis*, n. s.

Nigra, nitida, lævis; thoracis lateribus angulatis, flavis, scutello parvo, flavo, elytris rufo-flavis, fortiter sulcatis, pygidio fortiter vermiculoso. Long. 11 lin.

A rather short, broad species, not very convex. Clypeus rather narrowed anteriorly, with the front part closely and strongly punctured. Thorax with punctuation, which is only seen with a high magnifying-glass, very strongly angular at the sides rather before the middle, slightly sinuate behind the angulation; the sides yellow, with a large shallow impression, in the middle of which is a pitchy spot; the base only slightly sinuous, straight next the scutellum. Scutellum 2½ millimetres long, arcuately narrowed posteriorly. Elytra yellowish red, at the base a little broader than the base of the thorax, a little wider behind the middle; the margins with the basal half impressed above, and very much thickened; each elytron has ten strongly-impressed grooves, none of which (except the sutural one) reach the apex; the 7th, 8th, and 9th are short, terminating below the shoulder; the 10th is marginal, and does not extend much beyond the middle; the interstices are very convex, the alternate ones a little broader than the others. Sternal process long and thick, straight, but curved below, truncate at the apex.

*Hab.* Ecuador, Chiguinda (*Buckley*).

C. The two following species have the characters of Section B, but are remarkable for their small size, highly polished surface, rugose pygidium, which, with almost the whole under side of the insect, is clothed with pale fulvous pile. Species 18—19.

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18. *Antichira pilosula*, n. s.

Subrotundata, convexa, nitida, picea; thoracis marginibus lateralibus, corpore subtus pedibusque obscure flavis, pilosis, pygidio rugoso, setuloso. Long. 6 lin.

Front part of the head and the clypeus finely and moderately thickly punctured. Thorax very convex, broadest at the posterior angles, very slightly narrowed to a little in front of the middle, then obliquely narrowed to the front, but yet not very angular at the side; smooth, except a few delicate punctures at the anterior angles; the incrassated lateral margin yellow; the base with a broad arcuate lobe in the middle. Scutellum 2 millimetres long, as broad as long, smooth. Elytra smooth, with some bluntly-impressed lines on the disk; the margin incrassated at the base; with a line of punctures bordering the margin; the apex dull and rugulose. The pygidium coarsely rugose, beset with stiff yellowish hair. The sternal process moderately long and thick, somewhat enlarged and obtuse at the apex. The sterna, margins of the femora, and the sides of the abdomen beset with stiff yellow hair. Male.

*Hab.* Ecuador, Chiguinda (*Buckley*).

19. *Antichira puberula*, n. s.

Oblonga, convexa, nitidissima, picea, viridi-micans; thoracis lateribus pedibusque flavis, corpore subtus pygidioque flavo-hirtis, hoc rugoso. Long. 6¾ lin.

Front part of the head and the clypeus closely and very distinctly punctured. Thorax very convex, pitchy brown, reflecting pale green wherever the light falls upon it, moderately thickly and extremely delicately punctured; broadest at the posterior angles, very slightly narrowed to rather in front of the middle, and somewhat obliquely narrowed to the front; the sides, however, very slightly angular; the base with a broad arcuate lobe in the middle. Scutellum 2 millimetres long, and the same width at the base, triangular, but rounded at the apex itself. Elytra very little enlarged posteriorly, subparallel, deflexed at the apex, not very thickly and scarcely visibly punctured even with a glass; the extreme apex rugulose; the apical callosity rather prominent and conical; the margin at the shoulder is thickened, along the rest of the

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margin is a row of hair-bearing punctures. Sternal process rather long and thick, concave on its inner side, thickened and truncate at the apex. Female.

*Hab.* New Grenada.

Besides the difference in colour, this species differs from *A. pilosula* in being less rotundate, more oblong, in the scutellum being a trifle longer, and in the almost entire absence of impressed lines on the elytra.

I think *Chlorota rotundata*, Blanch. (Cat. Mus. Paris, p. 208), must closely resemble this species, and, if Prof. Blanchard has overlooked the long sternal process in placing his species in the genus *Chlorota*, mine may be only a variety of his insect.

### Thyridium, *Burm.*

The species here described differ from *Antichira* with small scutellum, in having the mandibles not notched on the outer edge; and differ from *Chlorota* in having a long sternal process.

A. Larger claw to all the tarsi bifid. Species 1—5.

#### 1. *Thyridium Sommeri*, n. s.

Obovatum, convexum, nitidum, subtus nigrum; capite, thorace, scutello tibiisque cupreis, elytris flavis, pygidio striolato et femoribus piceis. Mas. Long. 8 lin.

Short, oblong-obovate. Clypeus short, very closely and strongly punctured; head sparingly and finely punctured. Thorax distinctly angular at the sides; sparingly and finely punctured, with a line of rather strong punctures within the incrassated lateral margin; the base slightly oblique on each side, with a slight lobe in the middle, which is very slightly emarginate. Scutellum a curvilinear triangle, rather acute at the apex, nearly 2 millimetres long. Elytra yellow, with the suture tinted with fuscous (but with no sutural stria), convex, a little broader in the middle than at the base and apex, evenly and gently arcuate at the sides. Sternal process moderately long and very thick, gently arched, not distinctly enlarged at the apex. The sterna, femora, and abdomen are sparingly clothed with long pale pubescence.

*Hab.* Brazil.



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The specimen above described is from Dejean's collection, and I have retained his name for it.

2. *Thyridium punctatum*, n. s.

Oblongo-ovatum, leviter convexum, crebre punctatum; sternis pedibusque cupreis, corpore subtus longe fulvo-piloso. Mas. Long. 10 lin.

A very distinct species on account of its strong sculpture; and on account of the deep green colour, which is quite of a different kind from any of the *T. psittacina* group, approaching more the colour of *A. calcarata*, but paler, and having pitchy reflections in the shadows. Head rather thickly and very distinctly punctured. Thorax obliquely narrowed anteriorly from rather behind the middle; moderately thickly punctured on the disk, gradually more closely and more strongly punctured towards the side; the base slightly oblique on each side, truncate next the scutellum. Scutellum triangular, with a slight tendency to cordiform, acute at the apex, 3½ millimetres long, closely and obscurely punctured. Elytra thickly and strongly punctured, the punctures towards the sides horseshoe-shaped; each elytron has four impressed lines on the disk, and there is a well-marked sutural one; the margin below the shoulder is somewhat incrassated. The pygidium is rather coarsely vermiculose. The sternal process is not very long, and is rather slender, not inflated at the apex, but slightly curved over the anterior coxæ.

*Hab.* Venezuela.

3. *Thyridium sodale*, n. s.

Ovale, convexum, nitidum, prasinum, sat crebre evidenter punctulatum. Mas. Long. 15 lin.

Forehead delicately and rather thickly punctured, the clypeus more strongly punctured. Thorax 7 millimetres long in the middle, very obliquely narrowed anteriorly from rather behind the middle, very delicately and rather thickly punctured, the punctures more distinct towards the sides; the anterior angles very acute and moderately prominent; the sides distinctly angular; the base truncate in the middle next to the scutellum, oblique and very gently bisinuate on each side. Scutellum triangular

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(nearly rectilinear), very finely punctured, 4½ millimetres broad and 5 millimetres long. Elytra very delicately but distinctly and rather closely punctured; the margin is incrassate below the shoulder only. Pygidium closely and rather strongly vermiculate-striolate. The sternal process is long and very thick, obliquely truncate at the apex (viewed laterally), curved on the side next the anterior coxæ. The sides of the metasternum and the metathoracic epipleura are rather strongly, moderately closely, vermiculate-striolate. The sides of the abdomen are similarly sculptured, but not quite so strongly so.

*Hab.* Ecuador (*Buckley*).

Evidently very near *Chlorota psittacina*, Burm., but the punctuation is quite distinct; and although (by moving the insect about) four lines may be traced on each elytron, these lines are not punctured; the sternal process is not at all clavate.

*Chlorota euchloroides*, Murray, is very close to this species, but differs in having the thorax less angular at the sides; the anterior angles are not so prominent nor so acute, and the elytra, besides the ordinary punctuation, has the whole surface closely marked with excessively small punctures, which in some lights look elongate; the tarsi are coppery. The sternal process is very similar, but the angle next the coxæ is a little more acute.

4. *Thyridium scutellatum*, n. s.

Ovale, crassum, convexum, viride, subtiliter punctulatum; scutello subcordato. Long. 14 lin.

Allied to *Chlorota psittacina*, Burm., but very distinct from all the species of this group known to me on account of the form of the scutellum. Punctuation on the front of the head very fine and moderately close, becoming closer and stronger up to the front margin. Thorax 7 millimetres long in the middle, delicately and moderately thickly punctured, the punctures more distinct towards the sides; gradually narrowed anteriorly from very near the base; when viewed from above it does not appear the least angular at the sides, but when seen laterally there is a very obtuse angle; the base in the middle is broadly but very slightly, arcuately emarginate, gently oblique on each side, and gently bisinuate. Scutellum 6 millimetres broad at the base, very gently

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sinuate on each side beyond the middle, 6¼ millimetres long, very densely but almost imperceptibly punctured. Elytra densely and excessively finely punctured, the punctures appearing in some lights elongate, and intermixed with this are some rather stronger punctures; on each elytron four obscurely impressed lines may be traced; the margin below the shoulder is slightly incrassate. Pygidium strongly and moderately closely vermiculate-striolate. The sides of the metasternum and the base of its epimera are similarly striolate, but less strongly so; the sides of the abdomen are still less strongly striolate; the apical portion of the epimera is not very thickly punctured. Sternal process very long, gradually narrowing to the apex, slightly curved over the anterior coxæ. Body beneath and the femora almost destitute of any pubescence.

*Hab.* Brazil?

5. *Thyridium cyanipes*, n. s.

Obovatum, convexum, nitidum, viridi-prasinum; thorace angustiori, corpore subtus pedibusque cyaneis. Long. 11⅓ lin.

Head sparingly punctured; clypeus coarsely rugulose; its anterior margin only slightly arcuate, the front portion (as well as the mouth and antennæ) nearly black. Thorax 7½ millimetres long, 11½ millimetres broad at the widest part, scarcely narrowed posteriorly, gradually narrowed anteriorly from rather behind the middle; very delicately and moderately thickly punctured; just within the incrassated margin the surface is finely rugulose; the anterior angles rather prominent and acute, the sides (viewed from above) not angular, but arcuate; the base in the middle broadly and very gently and arcuately lobed, with a slight sinuosity on each side of the lobe. Scutellum a curvilinear triangle, 3 millimetres long, 4 millimetres broad. Elytra rather thickly and very evidently punctured, the punctures elongate when viewed in certain lights; sutural stria distinct; the margin below the shoulders is slightly incrassate (or perhaps rather turned under). Pygidium smooth in the middle of the base, vermiculate round the margins and sides, which are beset with long pale hairs. Sternal process long and very thick, a little enlarged at the apex, the apical angle bent over the anterior coxæ. Sides of the

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metasternum and the epipleura strongly and closely vermiculate-striate. Each abdominal segment has at the sides a band of strong hair-bearing punctures.

*Hab.* Colombia.

B. Claws of the anterior tarsi not bifid, but with a small tooth at the base; the larger claw of the four posterior tarsi bifid.

6. *Thyridium punctatissimum*, n. s.

Obovatum, viridi-olivaceum; elytris creberrime punctatis, pygidio corporeque subtus olivaceis, fulvo-hirtis, pedibus cyaneo-olivaceis, tarsis cyaneis. Long. 12 lin.

Antennæ and parts of the mouth bluish black. Head in parts finely punctured, the front margin of the clypeus rugulose. Thorax 7½ millimetres long, 12 millimetres broad across the middle, rounded anteriorly at the sides, gently sinuate behind the middle; sparingly and delicately punctured, except at the base, where the punctures become more frequent; the surface within the margin is closely (and almost rugulosely) punctured, but not at the hind angles; the incrassated margin is darker olive than the rest of the thorax; the basal lobe is broad and not very prominent, and gently arcuate, with scarcely any sinuosity on each side of it. Scutellum a curvilinear triangle, 4 millimetres broad, 3½ millimetres long. Elytra very thickly punctured, with a mixture of larger and small punctures; there is a distinct sutural stria (the suture nearly smooth), and there are two pairs of impressed lines on each elytron; the margin below the shoulder is slightly incrassate. Pygidium moderately strongly vermiculate-striolate. Sternal process rather strong, moderately inflated and obtusely rounded at the apex. Sides of the metasternum and epipleura densely vermiculate-striolate, the areas thus formed very small, and each having in the centre a small puncture. Sides of the abdomen rather strongly punctured.

*Hab.* Venezuela.

C. Larger claw of the anterior tarsi bifid; all the claws of the four posterior tarsi simple.

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7. *Thyridium lineatum*, Murray.

This species is described by Mr. Murray (Edinb. New Phil. Journ. v., 1857, p. 225) under the genus *Chlorota*, but it appears to me to be better to confine that genus to those species which have only a very short sternal process.

D. The following species has all the claws simple, but the outer anterior claw is more dilated at the base.

8. *Thyridium punctiventre*, n. s.

Viridi-olivaceum, lucens, oblongum, depressum; thorace antice angustato, lateribus flavis, elytris crebre punctatis ad apicem rugulosis, corpore subtus pygidioque albosetosis. Long. 8½ lin.

Front part of the head sparingly punctured; the clypeus gradually more thickly punctured to the front margin, where it is rugulose, tinted with yellowish. Thorax convex, 5½ millimetres long in the middle, broadest at the posterior angles, gradually narrowed to rather in front of the middle, and then more obliquely narrowed to the anterior angles, which are rather prominent and acute; surface sparingly and most delicately punctured, more closely, but very obscurely, punctured towards the sides; the base is broadly but very slightly lobed in the middle, nearly straight on each side. Scutellum a curvilinear triangle, 2 millimetres long and 2 millimetres broad. Elytra rather depressed, broadest about the middle, very obtuse at the apex, rather strongly and moderately thickly punctured, the punctures of unequal size, the apical margins rugulose, margin a little incrassate below the shoulder, and with an impressed line above the margin; subapical callosity obtuse, but very distinct. Pygidium coarsely rugose, and beset with long stiff hairs. Sternal process moderately long and thick, not inflated at the apex, but (viewed laterally) the point next the anterior coxæ is produced over the coxæ, as is common in many of the species. Metasternum strongly punctured (except in the middle), and at the sides rugulose, as well as the episterna; pilose. Legs yellowish green. Abdomen with a line of strong elongate punctures all across each segment, each puncture with a short stiff whitish hair.

*Hab.* Ecuador, Chiguinda (*Buckley*).

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CHLOROTA, *Burm.*

1. *Chlorota ærea*, n. s.

Ovata, convexa, subnitida, crebre punctulata, ærea; elytrorum marginibus parcius punctatis, apice confertim punctato. Long. 9 lin.

Of a brownish bronze, with more brassy tints in some lights. Head thickly punctured, rather coarsely so in the middle of the front part; the clypeus densely punctured, more rugulose at the margins. Thorax 5¾ millimetres long, broadest at the base, very slightly narrowed to a little in front of the middle, and then obliquely narrowed to the front, thickly and finely punctured on the disk, the punctuation quickly becoming closer towards the sides, where it is very dense, rendering the surface somewhat dull; the shining incrassated margin is very narrow in front, gradually wider posteriorly, the shining surface continued a little way along the posterior margin; the base somewhat straight on each side, but broadly arcuately lobed in the middle. Scutellum 2½ millimetres long, 3 millimetres broad, a curvilinear triangle, but with the slightest tendency to be cordiform. Elytra broadest in the middle, obtuse at the apex, finely and very densely punctured, the apex finely rugulose; the margin below the shoulder is incrassate and smooth (the margin somewhat turned under); on the side there is a very obtuse ridge, terminating before the apical callus, the surface below this somewhat shining, but finely punctured; suture slightly impressed, with no distinct sutural stria, but there is a fine line extending from the humeral callus to the apical one. Pygidium vermiculate-rugulose. Sternal process not very long, comparatively slender, and somewhat acuminate. All the under side of the insect (except the middle of the sterna) and the four posterior femora rugose (the abdomen more finely so than the rest), and beset with yellowish hairs.

*Hab.* Ecuador (*Buckley*).

2. *Chlorota vitrina*, n. s.

Oblonga, nitidissima, æneo-lucens, mutabilis; elytris apice subtiliter ruguloso. Long. 11½ lin.

A rather long-oblong species, with straight sides, narrower in front than behind, broadest just before the apex

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of the elytra; very highly polished, æneous where the light falls upon the surface, but almost black in the shade, with purple-coppery tints slightly visible in certain lights. Front of the head and the clypeus finely and closely rugulose; the clypeus rather acuminate and notched at the slightly reflexed apex. Thorax convex, moderately thickly but extremely delicately punctured, except within the incrassated margin, where it is closely rugulose, straight at the sides to rather in front of the middle, then obliquely narrowed to the front. Elytra impressed at the sides below the shoulders; at first sight appearing without punctuation, but on close examination some extremely fine punctures may be seen; the margin below the shoulder is incrassate, and there is a finely rugulose space above the margin; all the apex below the callus is densely and finely rugulose, the rugulose surface continued (gradually becoming narrower) round the side to about the middle, leaving the extreme margin at the side smoother. The sternal process is very short and small, the apex turned away from the coxæ. Body beneath hairy. Pygidium densely rugulose, more finely so at the base than at the apex, beset with yellowish hair. The larger claw to all the tarsi bifid.

*Hab.* Ecuador, Chiguinda (*Buckley*).

8. *Chlorota bidentata*, n. s.

Oblonga, antice paulo angustata, æneo-lucens, mutabilis, nitidissima; elytrorum marginibus apiceque subtiliter rugulosis. Long. 9 lin.

Closely allied to *C. vitrina*, but shorter, less straight at the sides of the elytra. The clypeus is a little less narrowed in front, and less acutely bidentate at the apex. The rugulose space within the lateral margin of the thorax is a little wider ($\frac{3}{4}$ mm. wide). The very finely rugulose surface of the apex (which is tinted with brown) is more extended, and is continued like a broad band all round the sides to the shoulder, leaving the incrassated margin below the shoulder, and a very short ridge on the side about the middle, smooth. The apex of the sternal process is turned up, *i. e.*, away from the anterior coxæ, as in *C. vitrina*.

*Hab.* New Grenad

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4. *Chlorota associata*, n. s.

Late ovalis, convexa, nigro-cyanea, nitens, subtus olivacea; elytris sulcatis, interstitio primo fortiter punctato. Long. 12 lin.

Head sparingly and delicately punctured; clypeus rugulose, parabolic in outline. Thorax 7 millimetres long, 13 millimetres broad, very convex, moderately thickly and extremely finely and delicately punctured, broadest at the posterior angles, scarcely narrowed to about the middle, then very obliquely narrowed to the front; the sides near the incrassated margin closely and coarsely punctured; the base slightly oblique on each side, straight (or only in the slightest degree emarginate) in the middle next the scutellum. Scutellum 5 millimetres long, and equally broad at the base, triangular, blunt at the apex, very delicately punctured. Elytra each with eight or nine very strongly obtusely impressed punctured lines (besides the sutural stria), the first broad interstice very strongly punctured, the 3rd to 7th interstices convex (especially the alternate ones), the 7th only convex posteriorly; the apex with some strong punctures; apical callus not distinct. Pygidium moderately closely vermiculate-striate. Sternal process very short and obtuse. Body below clothed with dark brown pubescence. Outer claw of the anterior tarsi with a sharp slender hook near the base; the other claws simple.

*Hab.* Ecuador, Chiguinda (*Buckley*).



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## XXXV. *Notes on* Hymenoptera, *with descriptions of new species.* By P. Cameron.

[Read October 5th, 1881.]

### OXYURA.

*Isobrachium hispanicum*, n. s.

Black, extreme apex of scape and flagellum, apical half of tibiæ and tarsi testaceous; basal half of tibiæ, femora and trochanters fuscous. Antennæ double the length of the head; the scape as long as the three following joints, stout, curved; two first joints of flagellum about equal; the second more globular and thicker than the first, and shorter than the third; the third and following joints subequal, cylindrical. Head broader than the prothorax, depressed, subquadrate, smooth, shining, impunctate. Prothorax three times as long as the mesothorax, smooth, shining, impunctate, narrow in front, widened behind, and compressed at the sides. Scutellum with two small foveæ at the base; behind there is a short depression, from each end of which proceeds, to the base of the metathorax, a minute depressed line. Metathorax a half longer than broad, perpendicularly truncated behind, finely striated transversely; in the centre is a straight longitudinal carina, and a slightly curved one on either side of this. Mesothorax very finely punctured. Abdomen shining, impunctate, acuminated at the apex. Terebra exserted, rufous. Wings almost hyaline, all the nervures pale fuscous. Humeral cellules unequal, the lower one being much longer than the upper, reaching to the base of the stigma. Female. Length $1\frac{3}{4}$ lin. Expanse of wings, $2\frac{1}{2}$ lin.

Allied to *I. dichotomum*, Först., but distinguished (1) by the unequal humeral cellules, (2) impunctate, glabrous head and prothorax, and (3) by the hyaline wings.

Taken on the Sierra Nevada, Spain, in July, by Dr. David Sharp.



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SIEROLA, n. g.

Antennæ 13-jointed, not much longer than the head; the scape thicker than the other joints, and as long as the following, the third and fourth slightly longer than the succeeding, and produced beneath on the lower side; remaining joints not much longer than broad, distinctly separated from each other. Wings with a stigma and prostigma, the two being separated by a hyaline space, costa thickened in front of stigma; radial cellule completely closed, the nervure being united to the costa, broader, and more rounded at the apex than base; two humeral cellules unequal, and closed; from the end of the lower (and smaller) cellule there proceeds from the upper end a small oval cellule, which is united to the prostigma by a short thick nervure, so that the upper humeral cellule is thus completely closed. From the end of the radial cellule runs, to the edge of the wing, a white spurious vein; another runs in the same direction from the small oval cellule above mentioned, the two being united by a cross nervure half-way between the radial cellule and the apex of the wing; another spurious vein runs from the lower humeral cellule to the bottom of the wing. Head, legs and body formed as in *Perisemus*, *Scleroderma*, &c. Abdomen longer than head and thorax, the third and fourth segments contracted in the middle at their junction; in length subequal; the last is acuminated.

This genus differs from all the genera of *Bethyloidæ* in having the radial cellule completely closed, and in the presence of the small oval cellule uniting the humeral cellules. It comes nearest to *Goniozus*, Förster. In the shape of the prostigma it more resembles *Perisemus*.

*Sierola testaceipes*, n. s.

Black. Head and mesonotum faintly alutaceous; abdomen smooth, shining; three basal joints of antennæ and legs testaceous; abdominal segments at their junction dull testaceous. Wings deeply fringed, shorter than thorax and abdomen, hyaline; stigma and prostigma fuscous; other nervures pale. Head and thorax covered with a scattered pubescence. Female. Length scarcely 1½ lin.

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Sent by the Rev. Thos. Blackburn from the Sandwich Islands (No. 94). Mr. Blackburn tells me that the species is rare; and that the only differences between what he takes to be the male and female are that the former has the abdomen somewhat blunter at the apex.

*Psilloma caudata*, n. s.

Reddish testaceous, middle of mesonotum and apical half of abdomen obscured slightly with fuscous; smooth, shining, impunctate; prothorax and petiole with a fringe of white hair; sides of thorax and abdomen with scattered hairs. Antennæ as long as the head, thorax, and second abdominal segment; scape as long as the four succeeding joints; first joint of flagellum thicker and a fourth shorter than the second, which is cylindrical and double the length of the third; the remaining joints to the penultimate broader than long, and becoming gradually thicker; last joint bluntly conical, and double the length of preceding. Petiole slightly broader than long, shorter than the coxæ, and bulging out in the middle. Abdomen bulging out in the middle, sharply conical and acuminated at the apex. Ovipositor nearly as long as the abdomen. Wings shorter than the body, hyaline, ciliated; nervures obscure testaceous. Female. Length (exclusive of ovipositor) 1½ lin. Expanse of wings, 1½ lin.

Sierra Nevada, Spain. Dr. Sharp.

Förster, so far as I know, never described the type of his genus *Psilloma;* and the only described species are *ciliata*, Thoms. and *incrassata*, Thoms., from both of which the present species is very distinct. *Psilloma* forms section C of *Belyta* of Thomson.

*Megaspilus punctulatus*, n. s.

Black; basal half of scape and legs with coxæ reddish testaceous. Antennæ as long as the thorax and abdomen; scape longer than the three succeeding joints; the second joint of the flagellum a half longer than the first and fourth; the rest subequal, and becoming gradually thicker; the last as long as the two preceding, but not thicker than them. Head pilose, longer than broad, somewhat broader than the thorax, depressed, deeply and coarsely punctured, and without

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any depressions. Antennæ arising from tubercles, and in front of them is a transverse suture. Mesothorax depressed and compressed at the sides. In front of the scutellum there is a deep transverse suture, from which runs on each side a deep suture to the prothorax, and a less conspicuous one in the middle, the space bounded by these sutures is deeply and coarsely punctured; the space on either side bounded by them and the scutellum is shining and almost impunctate, except at the edges. Scutellum shining and impunctate in the centre; the rest and metanotum punctured. Spines on metanotum well developed. Abdomen longer and broader than the thorax, subovate, striated at the base, and with a long distinct central carina, and a shorter less developed one on either side; the rest smooth, shining, covered at the sides and apex with long scattered white hairs. Head and thorax densely pilose. Wings rudimentary, scarcely reaching beyond the petiole. Length 1¼ lin.

Allied to *M. cursitans*, Nees, but easily known from it by the shorter and broader thorax, which is not uniformly punctured all over; more ovate abdomen, less elongated prothorax, and more pilose body.

Dalry, Ayrshire. August.

*Megaspilus mullensis*, n. s.

Black, shining, almost glabrous; scape, prothorax, base of abdomen and legs, with coxæ, testaceous. Antennæ longer than the body, filiform, glabrous; scape a little longer than the head; third joint a little longer than the fourth; the rest subequal; last joint broken off. Head more than a half wider than the thorax, smooth, shining, impunctate; eyes almost glabrous. Thorax less shining than the head, slightly aciculated; longer and somewhat narrower than the abdomen, which has the second segment striolated, but very indistinctly. Wings abbreviated, reaching to apex of second abdominal segment. Male. Length a little more than ½ lin.

Similar in coloration to *M. thoracicus*, Nees, but differing in its pile-less body, much broader head, thorax longer than abdomen, &c.

Taken on a grassy slope on Ben More, Mull, at an elevation of about 2000 feet, on June 19th.

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## BRACONIDÆ.

*Chelonus carinatus*, n. s.

Black, half-shining, covered with a close microscopic silky pubescence; the greater part of the scape of the antennæ and the four following joints reddish testaceous; extreme apex of coxæ, trochanters, apex and base of anterior femora, and the posterior knees, pale red; four anterior tibiæ and tarsi pallid testaceous; hinder tibiæ broadly annulated with white, the white ring being nearer the top than bottom; tips of four anterior tarsi and the hinder pair fuscous; the greater part of the hinder metatarsus white; spurs white; basal third of abdomen white, except a blackish mark at extreme base; at the apex this white portion is rounded, and at its junction with the black colour passes into brown. Mandibles reddish. Antennæ about the length of the body, 17-jointed, the seven apical joints thicker than the basal ones. Head finely punctured, the face covered with white hair. Mesonotum finely punctured. From the usual transverse ridge at the base of the scutellum there runs a central straight carina to the base of the mesonotum; next to this is a short carina, and outside of this again are two curved outwardly, but it is only the second which reaches the edge of the thorax; these keels are united by fine cross-bars. Scutellum smooth, shining on basal half, apical half with longitudinal striations. Metathorax punctured, and with distinct coarse longitudinal striations, truncated at the apex, and with a minute tooth at each edge. Abdomen about the length of head and thorax, finely punctured, the punctures almost obsolete on the basal white portion. The second segment depressed in the centre, and produced at the sides into a leaf-like ridge, from the inner side of which runs an almost obsolete carina in the direction of the centre of the segment, but which is not reached. The union (apparent) of the second with the third segment is indicated by a fine transverse line. Wings hyaline, stigma, radial and cubital nervures fuscous; other nervures pale testaceous. Female. Length 1¼ lin.

Various localities in the island of Oahu. Sent by Mr. Blackburn as No. 57.

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*Monolexis ? palliatus*, n. s.

Head cubital, shaped as in *Spathius*. Antennæ 32-jointed, the joints of almost equal thickness throughout, the first joint of flagellum one fourth longer than second. Wings with two cubital cellules. Anterior discoidal cellule petiolate, hinder discoidal cellule open, recurrent nervure interstitiate. Neuration of posterior wings as in *Spathius*. Fore and hinder tarsi much longer than their tibiæ; middle tarsi scarcely longer than tibiæ. Abdomen subsessile; first and second segments separated by a deep transverse furrow, widest in the middle, where it projects behind; second segment shorter than first; the rest shorter, subequal. Ovipositor a little shorter than the abdomen. Pallid testaceous, a longish spot on vertex, one behind the eyes; the greater part of the lateral lobes of mesonotum and of pleuræ and abdomen fuscous; the metanotum, metapleuræ, and basal third of abdomen dark testaceous. Legs white, a line on hinder femora, base of hinder tibiæ, a broad line in middle and base of tarsi fuscous. Wings hyaline, costa testaceous; stigma fuscous, paler at base. Antennæ longer than body, fuscous at apex, and the other joints have a small fuscous ring at the apex. Head and mesonotum smooth, shining, impunctate; the head with a few longish scattered hairs; metanotum with an indistinct central carina, which bifurcates towards the middle of metanotum in two branches, which turn to the side; hinder half of metanotum slightly rugose, and sparsely covered with white hairs. The first and second abdominal segments are coarsely constricted longitudinally; on the extreme edge of first is a distinct keel, and from the base there run two central keels, which get lost in the striations in the middle of the segment; the basal half of the space enclosed by these keels is smooth, shining, not striated. The rest of the abdomen is smooth, shining, impunctate. The male has the antennæ longer (distinctly longer than the body), the metanotum and base of abdomen darker; the fuscous ring on hinder tibiæ is shorter, and the tarsi have only the apical joints fuscous. Length 2 lin. Expanse of wings, $3\frac{3}{4}$ lin.

In the form of the head, antennæ, and thorax, and in coloration, this species agrees with *Spathius*, but it differs from it in having only two cubital cellules, in the abdo-

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men being almost sessile, not pedunculated, and in the number of segments of the abdomen. It comes into (through having only two cubital cellules) Förster's "family" *Hecabolidæ*, and in the table which he gives (Verh. v. Rhein. xix., 237) it might belong to *Monolexis*; but as Förster only describes the neuration of the wings (and that but very slightly), and as the type-species has never been described, I am not at all sure that the present species has any connection with Förster's genus. It will in all probability form the type of a new genus. The maxillary palpi are 6-jointed, the labial 4-jointed; but I should add that the labial palpi were accidentally destroyed before I could examine them properly.

Mr. Blackburn takes this ichneumon rarely near Honolulu. (No. 63).

## CHALCIDIDÆ.

*Chalcis polynesialis*, n. s.

Black, covered sparsely with a longish silvery pubescence. Base of scape, a line on the pronotum behind, and the scutellum more or less ferruginous. Anterior legs with the trochanters, femora, and tibiæ reddish yellow, paler at the apex, and more or less fuscous in the middle; hinder legs with the coxæ reddish black behind; trochanters and base of femora reddish, the rest black, save a yellow spot above at the apex, which is reddish beneath; tibiæ black at the extreme base; next to this is a clear yellow ring, the centre is black, more or less reddish on lower side, the apex clear yellow on outer side, the sides and lower parts reddish-yellow; tarsi yellowish-testaceous, the extreme apex fuscous. Head and thorax covered with shallow punctures; those on the head and prothorax are smaller than those on the middle of the mesonotum, which are again slightly smaller than those on the scutellum; lateral lobes of mesonotum with finer punctures than on the head. Metanotum with larger punctures than on the scutellum. Scutellum rounded behind, and with a transverse indistinct ridge on the apex. Abdomen not much longer than the thorax, ovate, pointed at the apex, smooth, shining, impunctate, almost glabrous at the base, the four apical segments clothed at the sides and beneath with a longish white pubescence. Wings hyaline;



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tegulæ yellow; the teeth on femora are very strongly developed, especially at the apex. Length scarcely 1½ lin.

Seemingly a variable species as regards coloration. One of my specimens has only the apex of the scutellum reddish; another has it entirely of that colour, as well as the apex of the mesonotum. The colour of the legs also varies.

Taken by Mr. Blackburn near Honolulu. (No. 56).

*Spalangia hirta*, Haliday.

Mr. Blackburn sends a specimen of this species, which was found by him in an outhouse attached to his residence in Honolulu (No. 93). It is probably introduced, being a parasite of the house-fly. Walker ('Notes on Chalcidiæ,' p. 88) records the other species (*S. nigra*) from the Galapagos Islands.

## FOSSORES.

### CRABRONIDÆ.

*Crabro polynesialis*, n. s.

Black; scape beneath and basal three-fourths of mandibles reddish-yellow; calcaria testaceous; labrum and cheeks covered with a dense golden pubescence; head and thorax sparsely covered with longish hairs, fuscous on top, white at the sides; base of abdomen almost glabrous, the apical segments covered with longish silvery hairs. Head and thorax semi-opaque, finely punctured, the punctures on scutellum and post-scutellum rounded and more distinct than on the mesonotum, and very finely longitudinally striated; extreme base of metathorax longitudinally striated, and with a few short more or less indistinct carinæ running from the transverse ridge at the apex of the post-scutellum; on the centre there is a furrow, which is scarcely visible on the upper half, but is more distinct on lower half. Abdomen smooth, shining, the apical segments faintly punctured and covered (especially at apex of segments) with white hairs; the last segment has two carinæ at the sides, which converge at the tip, which is acute. Wings subhyaline, with a distinct violet iridescence; nervures

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testaceous; outer edge of tegulæ rufo-testaceous. Hinder tibiæ armed with thick, widely separated, blunt, fuscous-coloured spines. Length 4¾ lin. Expanse of wings, 6¾ lin.

Closely allied to *C. unicolor*, Smith, but readily distinguished by the different colour of head and antennæ, by the less dense pubescence on the thorax, by the less dense punctuation on the mesonotum, which has a blistered appearance, and by the metanotum having the central channel very much less developed. The spines on the hinder tibiæ of *unicolor* are also more numerous and more strongly developed.

Mr. Blackburn tells me that the male has dentate antennæ like the same sex in *C. denticornis*, Smith, &c.

Taken by Mr. Blackburn at an elevation of from 3000 to 4000 feet on Mauna Loa, Hawaii. (No. 75).

## TENTHREDINIDÆ.

### *Incalia hirticornis*, Cameron.

This genus wants entirely the "lanceolate cellule," this being also the case with *Syzygonia*, *Cephalocera*, and one or two undescribed genera from Central America. *Incalia*, *Syzygonia*, and *Brachytoma* have short thick palpi, the maxillary being 4-jointed and the labial 3-jointed. I know also a genus from Central America which has only 3-jointed maxillary palpi, and the labial apparently with only one joint.

### *Nematus scoticus*, n. s.

Black; head and thorax covered with a close pubescence, which is especially long on the face; labrum, legs, and apex of abdomen dull testaceous; mandibles brownish; palpi dark testaceous; the greater part of coxæ, a line on the under side of anterior femora, one above and beneath on middle, and the greater part of posterior, black; apex of posterior tibiæ and tarsi fuscous. Vertex minutely punctured; antennal fovea long, broad, and moderately deep; frontal area indistinct. Antennæ as long as the abdomen, thickish, the third and fourth joints about equal, and not shorter than the ninth, which is sharply conical at apex; black, brownish from the third joint beneath, and slightly pilose. Mesonotum shining, scarcely punctured; pleuræ

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opaque, punctured; sternum smooth, shining; tegulæ testaceous. Wings hyaline; nervures for the greater part, costa and stigma, livid white; first submarginal nervure distinct; third submarginal cellule longer than broad. The spurs do not reach to the middle of metatarsus; claws with a minute subapical tooth; the cerci are longer than spurs; sheath of saw with a long hair fringe. Female. Length 2½ lin. Expanse of wings, 5½ lin.

Agrees with the *Ambiguus*-group in having the antennæ brownish beneath, but differs in the punctured pleuræ, black pronotum, and clypeus. It differs from *pallipes* and its allies in its more shining body, in having the antennæ brownish beneath, and the pronotum black. It has the legs covered pretty much as in *lativentris*, Thoms., but the body is much narrower, and more shining and less punctured, the costa and stigma of a more livid white, the third submarginal cellule shorter, and the apex of the abdomen is more marked with testaceous colour.

Taken at Braemar by Dr. Sharp.

*Tenthredo togata*, Panz.

No less than five species have been referred to the *T. togata*, Pz., by different authors. A reference to the original figure and description (F. G., lxxxii., f. 12) shows beyond doubt that it is the same as *Emphytus succinctus*, Kl., which name must, therefore, sink in favour of *togata*.

All this confusion has been caused by Fabricius (S. P., 32, 15) describing a species under the name of *togata* which is quite distinct from that described by the German author. The *Tenthredo togata*, Fab., is a rare and little-known species, and it has been described under the name of *cingulatus* by St. Fargeau (Mon. 117, 243), and as *Emphytus neglectus* by Zaddach (Beschr., 27). André (Species des Hymén. i. Cat. p. 31*) sinks it as a synonym of the common *Emphytus cinctus*, but to my mind the two are quite distinct; *cingulatus* being recognised from *cinctus* by its smaller and more slenderly-built body, clearer wings, longer and thinner antennæ; the mouth, pronotum, and legs marked with white; tarsi fuscous; the posterior tarsi longer compared to the tibiæ, and the blotch much larger, more distinct, and

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shaped like a triangle. The synonymy of the two species will then be:—

*E. togatus*, Pz., *non* Fab. = *succinctus*, Kl.

*E. cingulatus*, Lep. = *togata*, Fab., *non* Pz. = *neglectus*, Zad.

*Pachyprotasis albicincta*, n. s.

Black, yellowish-white beneath. Head black on the vertex from a little above the insertion of the antennæ behind, and at the sides above the upper fourth of the eyes; the eyes in front are entirely bordered with yellowish-white, and this colour is prolonged on either side behind the ocelli into two small irregular points. The yellowish-white colour is also prolonged between the antennæ into the black portion, where it terminates a little above the eyes in an oval spot. Thorax and abdomen black above, save a triangular mark on the mesonotum (as in *P. rapæ*, &c.); a small spot behind this, scutellum, post-scutellum, a longer, narrower, transverse line behind it, the apical edges of all the abdominal segments, and the greater part of the last segment above, whitish-yellow. Antennæ black, with the two basal joints yellow beneath. Tegulæ white. Mesopleuræ black beneath the wings, this black being continued as a narrow oblique line to the middle coxæ; lower down there is a broader transverse black mark. Legs yellowish-white; four anterior lined with black above; posterior pair with an oblique black line on the coxæ, a line over the trochanters and femora, and the whole of tibiæ (save an obscure pale spot in the middle beneath) and tarsi black; spurs black, paler at the base; sheath of saw black, white in the middle. Wings hyaline; costa and stigma black. Length 4½ lin.

*Hab.* Himalayas.

Similar in sculpture to *rapæ* and *antennata*, but it is a broader insect. From *rapæ* it differs in the abdomen being distinctly banded with white on all the segments; in the different arrangements of the black on the mesopleuræ, and in the much longer metatarsus, which is as long as the whole of the succeeding joints; from *antennata* the black on the mesopleuræ and the black hind tibiæ distinguish it at once.

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## THE BRITISH SPECIES OF *TENTHREDOPSIS*, Costa.

I have recently subjected the saws of as many forms of *Tenthredopsis* as I could obtain to a careful microscopical examination; and the result of this examination has convinced me that many of the forms, which are regarded by almost all the recent writers on the subject as varieties of one or two species, are, in reality, good species. I find that each form exhibits distinct peculiarities in the shape and arrangement of the teeth on the saws; in some cases no doubt the differences are slight, but in others they are markedly distinct. The form of the saw cannot very well be described in words, and I have not attempted to do so here; but in the Monograph of the British Sawflies I have now in preparation, figures will be given of the saws of the species enumerated here. From want of material I have not been able to assign the males to their respective females in more than eleven species. The following is a list of the British species, with descriptions of nine species which I consider to be undescribed:—

1. *T cordatus*, Fourc. = *dimidiata*, Fab.
2. *T. microcephala*, Lep.
3. *T. femoralis*, Steph.
4. *T. caliginosus*, Steph.

### 5. *Tenthredopsis nigronotatus*, n. s.

Black; labrum, clypeus, mandibles, orbits of eyes, a spot behind them, scutellum and two spots behind it white; legs, and third, fourth, and fifth abdominal segments in part bright red; coxæ, trochanters, and an interrupted line down the centre of the red abdominal segments black; hinder coxæ pitchy on lower side in the middle; posterior tarsi faintly fuscous; clypeus almost truncated at the apex. Antennæ black, the four or five apical segments fuscous beneath. Wings hyaline; stigma fuscous, the extreme base white; tegulæ black. Length nearly 6 lin.

Very similar in coloration to *ignobilis*, but larger and stouter; antennæ and spurs longer; clypeus yellow and not so transverse at apex, and the abdomen has only

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three segments red, and these are marked with black in the centre.

In Shuckard's collection, now in the possession of Mr. Edward Saunders.

6. *T. ignobilis*, Kl. = *stigma*, Lep., *non* Fab.

7. *T. nigricollis*, Cam. = *scutellaris*, Lep., *non* Fab.—This species is very like *ignobilis*, but it differs from it in having the hinder femora black; the red band on abdomen is narrower, and the mesonotum is quite black, and does not bear a reddish spot on lateral lobes. The three foregoing species may be known from the other red-banded species by having the pronotum, coxæ, and trochanters black; while *scutellaris*, &c., have these parts more or less marked with white, and they have also (except *picticeps*), the red on abdomen spotted with black in the middle.

8. *T. scutellaris*, Fab., *non* Lep.

9. *Tenthredopsis flavomaculatus*, n. s.

Black, shining, pilose; labrum, clypeus, mandibles, orbits, a longish spot behind the eyes, edge of pronotum, scutellum and the usual parts behind it, sometimes a few minute spots on mesonotum, a broad band on base of abdomen, and an irregular spot on coxæ, bright yellow. Antennæ pitchy; the edge of second, the whole of third, fourth, fifth, and sides of sixth abdominal segments bright testaceous-red; legs bright testaceous; the greater part of coxæ and the base (sometimes a line above) of hinder femora black; hinder tarsi more or less fuscous. Wings hyaline; costa and stigma fuscous, the latter white at base.

The male is similarly coloured to the female save that the abdomen has only faint indications of the testaceous colour on the middle abdominal segments and beneath; the antennæ if anything are lighter coloured on lower side; the posterior femora are entirely black, and the tibiæ and tarsi pitchy. The last segment above bears two deep depressions, and the yellow line on base is scarcely visible. Length 4½ lin.

Very similar to *T. picticeps*, but shorter and broader; the antennæ are shorter, head wider, head and thorax

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more shining, and the band on base of abdomen much wider. The saw is very different.

Not common. Mull, Rannoch.

10. *Tenthredopsis picticeps*, n. s.

Black; labrum, clypeus, orbits of eyes, a line on pronotum and scutellar spots, white, the third to sixth segments of abdomen all round, and the legs, bright red; coxæ black, largely white behind; trochanters white; posterior femora black at base; posterior tarsi fuscous at apex. Antennæ longish, pale beneath. Wings hyaline; stigma white at base. Length 5 lin.

Allied to *ornatus*, but it has the incision in clypeus not so deep, the eyes are marked with yellow all round, the antennæ are longer, with the third joint not so long in proportion to the fourth, and the pleuræ are scarcely punctured; *ornatus*, too, has the clypeus black.

Rare.

11. *T. ornatus*, Lep. = *excisus*, Thoms.

12. *T. tristis*, Steph.

13. *T. fulviceps*, Steph.

14. *Tenthredopsis lividiventris*, n. s.

Black; labrum, clypeus, mandibles, the orbits of eyes broadly, edge of pronotum, tegulæ, and scutellar spots, white; an irregular splash on mesopleuræ, and one on each side of sternum, and the edge of abdomen above testaceous; the sides and lower surface livid white; legs testaceous; coxæ black, lined at the sides and beneath with livid white; trochanters pale; hinder femora for the greater part black above; apex of hinder tibiæ and tarsi fuscous. Wings hyaline; stigma pale at base; tegulæ white. Length scarcely 6 lin.

Easily known from the other British species by the livid abdomen, and by the pale testaceous splashes on pleuræ and sternum.

Not common. Mugdock Wood, near Glasgow, early in June.

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15. *Tenthredopsis albomaculatus*, n. s.

Head with the labrum, clypeus, mandibles, and the orbits of the eyes broadly, white; the rest dull brown, save the sutures on vertex and the space surrounding the base of antennæ, which are black. Antennæ dull testaceous, darker above, especially at the apex, which is somewhat attenuated. Thorax black, a line on pronotum white; mesopleuræ with a broad white mark; metapleuræ lined with white; sternum for the greater part dull brown; sutures of mesonotum dull brown; scutellar spots white. Abdomen dull testaceous, a broad black band down the back, a white transverse line at the base. Legs testaceous; coxæ black, broadly lined with white at the sides and beneath; hinder tarsi and apex of tibiæ fuscous. Wings hyaline; stigma fuscous, white at the base. Length 4 lin.

This is a somewhat larger insect than *lividiventris*; the brownish colour on head and thorax is much more extended; the marks on pleuræ are larger and clear white; antennæ paler; coxæ almost wholly white, and the legs reddish without any black on them.

Rare. Rannoch, in June.

16. *Tenthredopsis nigriceps*, n. s.

Dark rufescent. Antennæ, head below the hinder ocellus, prothorax beneath, mesopleuræ behind, metathorax, the greater part of the four anterior coxæ, and all the trochanters, deep black; scutellar spots and cenchri yellow. The front tibiæ are paler than the rest of the legs, the base of middle femora, and the greater part of the posterior femora and coxæ suffused with black; hinder knees black; posterior tarsi fuscous. Head and thorax covered with a close fuscous pubescence; sutures of the mesonotum and parapsides black; labrum dirty white; palpi dark testaceous; coxæ and apex of abdomen black. Antennæ attenuated at the apex, longer than the abdomen, the third joint distinctly longer than the fourth; spurs on hinder legs not reaching to middle of metatarsi. Wings hyaline; costa pale, except before stigma, where it is fuscous; stigma fuscous, white at the base; accessory nervure in pos-



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terior wings appendiculated; tegulæ deep black. Length nearly 4¾ lin.

The dark rufescent body and the black head and pleuræ readily separate this species.

Rare. Salen, Mull; June.

17. *Tenthredopsis Saundersi*, n. s.

Dark testaceous; mandibles, labrum, clypeus, scutellar spots, yellow; sides and lower part of thorax (save a dark testaceous splash on sternum), coxæ, trochanters, base of hinder femora, the middle suture on mesonotum, metanotum, base and apex of abdomen, and a triangular mark in centre of intermediate segments, black; hinder tibiæ almost piceous; apex of tibiæ, base and apex of tarsi blackish, the second, third, and fourth joints white. Antennæ fuscous; clypeus slightly incised. Wings hyaline; costa testaceous; stigma fuscous, white at the base. Calcaria short, not reaching to middle of metatarsus. Length 4 lin.

Similar to *T. nigriceps*, but it differs in being smaller and narrower, in having the lower part of the head the same colour as the upper, in the clypeus being slightly incised at the apex, the spurs shorter, tarsi paler, &c.

A single specimen in Shuckard's collection.

18. *Tenthredopsis dorsivittatus*, n. s.

Luteous; labrum, clypeus, orbits of the eyes, a spot behind the eyes, a line on pronotum, scutellar spots, and a line on base of abdomen, bright yellow; the suture on pleuræ, the greater part of metanotum and base of abdomen, and a broad band, usually more or less interrupted on middle segments, on back of abdomen, and the sheath, deep black; the four anterior coxæ dark luteous, more or less black and white; hinder coxæ black, spotted with brown and white; trochanters pale, a black spot beneath; hinder tarsi with the joints more or less fuscous. Wings hyaline; stigma white at the base. Female. Length 3¾—4½ lin.

A Scotch specimen has the antennæ entirely luteous, and the black band on abdomen very faintly indicated, the tarsi scarcely infuscated, the space surrounding the ocelli, and the middle suture on mesonotum, black. An

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English specimen is much darker coloured; the black band on abdomen is represented on segments 3—5 by a triangular black mark on each, but the black extends all over the upper surface of the basal and apical segments; the hinder tibiæ and apex of femora are fuscous, and the four apical joints of posterior tarsi pale; the antennæ pitchy, and the metapleuræ are not altogether black.

A species intermediate between *T. inornatus* and *nigriceps*; from the former it may be known by having the metapleuræ black, the coxæ blacker, and (as well as the trochanters) more distinctly marked with white, the antennæ and spurs longer; from the latter, by its longer antennæ and spurs, lighter-coloured antennæ, luteous tegulæ, pale trochanters, and entirely luteous femora.

Apparently rare in England and Scotland.

19. *Tenthredopsis inornatus*, n. s.

Dark testaceous; mandibles, clypeus, labrum, scutellar spots, yellow; dorsum of abdomen with an interrupted black band; hinder tarsi fuscous; apical joints of antennæ fuscous; vertex in centre, coxæ, trochanters, and hinder femora at base, and metapleuræ largely marked with black. The middle suture on vertex is absent; there is no distinct furrow between the ocelli, only a depressed space; frontal area depressed. Antennal fovea wide. Wings hyaline; stigma white at the base.

The male black; the labrum, clypeus, orbits of the eyes broadly, tegulæ and edge of pronotum yellowish white; front coxæ with a white spot on lower side; the remainder, and the posterior coxæ and base of femora, black; trochanters pale, the rest of the legs and abdomen reddish, except the apex and a band in the centre of the latter, which are black. Length $4\frac{3}{4}$ lin.

Compared with *T. nassatus*, it is smaller; the antennæ are shorter and thicker in the middle, with the third joint longer in proportion to the fourth; the colour is darker, the pubescence (especially on the mesonotum) is denser, the hinder tarsi are shorter in proportion to the tibiæ, and the spurs shorter. *Nassatus* too wants the black on the legs and pleuræ, and the head projects more behind the eyes. *Sordidus* may be known from it by its longer and thinner antennæ; the colour of the

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body is much brighter, the antennal fovea is deeper, but the frontal area is not so clearly indicated, the clypeus is more transverse at the apex, the base of the legs always paler than the rest, and the pleuræ are marked with yellow. *Dorsivittatus* may be known from it by the black metathorax and coxæ, by the band on the abdomen being broader at the base and more distinct throughout, the band in *inornatus* being not much more than a darkening in colour compared to the colour of the rest of the abdomen.

Rare on birch in June. Bishopton, Rannoch.

20. *T. nassatus*, Lin., *non* Thoms.

21. *T. sordidus*, Kl.

The following table will aid in the identification of our species. I should add that I am not quite satisfied about some of the names I have adopted from the older authors, whose descriptions are not always clear, and the synonymy is very confusing, owing to different species having been described under the same name:—

A. Body for the greater part black.

I. Abdomen red at apex.

Legs entirely red, . . . . . *cordatus.*
Hind legs for the greater part black. *femoratus.*

II. Abdomen entirely black.

Legs red. . . . . *microcephalus.*
Legs for the greater part black. . . *caliginosus.*

III. Abdomen red in the middle.

*a.* Pronotum and coxæ entirely black.

1. Posterior femora black. . . *nigricollis.*
2. Legs red.
   Antennæ short; hinder knees black; the red on abdomen not spotted with black. *ignobilis.*
   Antennæ longish; the red on abdomen spotted with black; knees black. . *nigronotatus.*

*b.* Pronotum, coxæ, and femora lined with white; the red on abdomen marked with black in the centre.

1. Posterior femora black. . . *scutellaris.*
2. Posterior femora red.

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*a.* Clypeus deeply incised; tegulæ white. *ornatus.*
*b.* Clypeus truncated; tegulæ black or fuscous; the red on abdomen marked with black; a broad yellow band on basal segment; tegulæ black. *flavomaculatus.*

The red on abdomen not marked with black; tegulæ fuscous. . . . . *picticeps.*

IV. Abdomen testaceous at the sides and beneath.
*a.* Head and thorax black; a yellow line at base of abdomen; hinder femora black. . . *tristis.*
*b.* Head more or less testaceous.
1. Thorax entirely black; hinder femora black. *fulviceps.*
2. Thorax lined with white on pronotum and sides; vertex for the greater part black; mesopleuræ and sternum marked with brown spots. *lividiventris.*

Vertex for the greater part testaceous; mesopleuræ with a large white mark. *albomaculatus.*

B. Body for the greater part luteous.
1. Head below the ocelli and antennæ deep black; hinder femora for the greater part black. *nigriceps.*

II. Head below the ocelli luteous.
1. Mesopleura and sternum black; coxæ and base of femora black. . . . . *Saundersi.*
2. Mesopleura and sternum luteous.
*a.* Metapleura black. . . . *dorsivittatus.*
*b.* Metapleura luteous.
1. Coxæ and sutures of meso- and metapleuræ marked with black.
Calcaria short; second recurrent nervure not interstitiate. . . . . *inornatus.*
Calcaria long; second recurrent nervure interstitiate. . . . . *nassatus.*
2. Coxæ and sutures of pleuræ marked with yellow and white. . . . . *sordidus.*

*Tenthredopsis dorsatus*, Spin.

Ins. Lig. ii., 17, pl. iv., f. 15.

This is a good species. It is very like *ornatus*, Lep., but is a broader and stouter-built insect, the antennæ

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are shorter and stouter, the abdomen has only four of the segments red, the wings are fuscous, and the saw is different. Otherwise the coloration is the same as with *ornatus*.

Dr. Sharp found *T. dorsatus* in Spain.

*Dolerus tinctipennis*, n. s.

Deep black, shining, covered on head and thorax with a close white longish pubescence; head roughly punctured; the scutellum and middle lobe of mesonotum clearly but not deeply, nor closely, the lateral lobes on inner sides faintly, and on outer scarcely, punctured. Sutures on vertex scarcely visible. Antennæ not much longer than the abdomen, the third joint not much thinner than the following, and one-fourth longer than the fourth, which is a very little longer than the fifth; the joints from the fourth distinctly thickened, the two apical a very little thinner than the preceding, but still thicker than the third. Cenchri large, greyish white. Base of abdomen smooth, impunctate. Wings with deep black nervures and stigma; apical half in both wings fuscous, inner half hyaline; accessory nervure in hind wings shortly appendiculated. Spurs longish; four anterior fuscous, posterior deep black. Length 3½ lin.

The nearest ally of this species is *D. Gesneri*, André; but that species is much larger, has the antennæ longer and more filiform, the mesonotum more deeply and uniformly punctured all over, and the wings not so deeply fuscous in colour. The saw of *tinctipennis* and *Gesneri* agrees with that of *D. dubius*, Kl., in having the surface indented with cross-bars bearing teeth. See Hartig, Blattw., pl. v., fig. 4*a*.

*D. Gesneri*, André, I found at Loch Awe last June. The front legs are sometimes entirely black.

*Dolerus megapterus*, n. s.

Black; head and thorax opaque, densely covered all over with a close longish grey pile, which gives these parts a greyish appearance; closely punctured all over. Antennæ not much longer than the head and thorax, short, thick, the last joint distinctly thinner than the eighth, the third much longer than the fourth. Cenchri

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dull grey. Abdomen smooth, shining, the basal segment with a few scattered punctures; the sides and belly covered with a whitish pubescence, which, however, is not so long as that on the thorax. Wings almost hyaline, large; nervures and stigma black; transverse cubital, radial, and recurrent nervures white in the middle; transverse median nervure received before the middle of the cellule; accessory nervure in hind wings almost interstitiate. Length 4¾ lin.

Slightly larger than *D. fissus* (*cenchris*), but the antennæ are shorter, thicker, and not so attenuated at the apex, punctuation on mesonotum not so deep, while the pile is longer and thicker, the transverse median nervure is received nearer the base than apex of the cellule, the contrary being the case with *fissus*, and the cenchri smaller and dull grey. The saw too is differently indented at the edge.

Manchester district.

*Dolerus intermedius*, n. s.

Black, shining, covered with a short scattered pubescence. Head roughly punctured; sutures on vertex distinct and very shining; the whole of the scutellum and the middle lobe of mesonotum punctured; the lateral lobes also punctured, but not so deeply and more irregularly; cenchri large, clear ivory-white. Abdomen longer than the head and thorax, bulged out in the middle, the basal segment impunctate, the following finely shagreened, three basal segments glabrous, the rest slightly pilose; blotch distinct. Antennæ slightly thickened in the middle, shorter than the abdomen, the third joint a little longer than the fourth, the last sharply conical. Spurs pale at the apex, the hinder pair reaching to the middle of the metatarsus, which is pale, curved at the base, and thickened at the apex, and scarcely longer than the two succeeding joints. Wings hyaline, slightly infuscated at the extreme apex, accessory nervure in hind wings appendiculated; costa, stigma, and nervures black, save the transverse nervures and the lower part of stigma, which are milk-white. The male has the head and thorax more deeply punctured, the antennæ thicker and as long as the abdomen and half the thorax; the third joint almost shorter than the fourth. Length 3½—4 lin.

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Agrees with *varispinus*, Htg., in having the lower part of the stigma, recurrent and transverse nervures, white, and in the form of the head; but it is smaller and narrower, the punctuation on head and thorax is finer and closer, cenchri larger and of a clearer white, the transverse radial nervure is not received close to transverse cubital, and the transverse nervures in posterior wings are wider apart. As in *varispinus*, the base of hind tarsi is generally white, but is occasionally black, and the spurs are in some cases blackish, in others wholly white. The saw is different from that of *varispinus*. It is smaller, as a rule, than *æneus*.

Common and widely distributed.

From an extensive examination of the ovipositor in the *Tenthredinidæ*, I have become convinced that its form affords us an almost absolute test of specific distinctness, and that its examination ought never to be neglected when describing as new, any doubtful forms. This is no doubt a troublesome proceeding, but it is certainly worth the labour when we consider that it enables us to define the limits of species to a very great extent indeed. I think then that no apology is needed if I describe my method of mounting and preserving the "saw" for microscopic examination, the more especially as the method can be applied to microscopic mounting generally.

With fresh specimens the saws can be extracted very easily by pressing the abdomen, when they will be protruded and readily extracted. With old specimens it can be done equally well by placing the insect in a relaxing-dish, or, more promptly, by steeping it in water for a day, when they can be taken out in the same way as with fresh insects, the only difficulty being experienced with insects full of eggs. For their better examination the four pieces composing the ovipositor proper should be separated; after which they must be steeped in turpentine for a day or two so as to get rid of air. This is best done by enclosing them in a small folded piece of paper; and, if they be properly labelled, many different preparations can be placed in the turpentine-bottle together.*

* In the case of such organs as the mouth parts (palpi, &c.), I find it an advantage, after dissection, and when they are ready for mounting, to place the papers containing the preparation inside a book for a day or so, as by doing so the parts retain their position better, and are not so apt to curl up.

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Next take a sheet of fine Bristol-board, and cut it up into pieces, say twelve lines by nine, and punch, at one end, a round or square hole four or five lines across. On the lower side of this fasten, by means of Canadian balsam dissolved in benzine, a microscopic cover glass. When this has dried fill up half the cell thus formed with the same composition, spreading it as evenly as possible, and in it arrange your preparation. Put it aside for some hours in a place where no dust will fall on it, then fill the cell with enough balsam to run over the edge of the cell, place a cover-glass over it, and press it down. All that now requires to be done is to allow the preparation to dry, taking special care to keep it flat, to label it, and stick a pin through the card, by means of which it is stuck in the cabinet alongside the insect from which the part was taken. To examine it under the microscope, all that is necessary to do is to place an ordinary glass slide across the stage, and place the card on it, in doing which it is not necessary to take the pin out of it, if a short pin be used.

The great advantage of this plan for entomological purposes is, that it does not necessitate the formation of two distinct collections, which must be the case if dissections are mounted on glass slides, which cannot, of course, be placed alongside the insects. Besides that it is cheaper, more expeditious, and safer; for the cards are so light that no injury comes to them from falling, or getting loose in the box. If desired, a coloured ring can be put round the top object-glass by the turn-table in the ordinary way, but, except for ornament, I do not think it necessary. I usually prepare two or three dozen of the cards with one cover-glass on at a time, so as to have them ready for use. I should add that the object of letting the dissections harden in the cell half filled with balsam is that three or four separate parts may be arranged in the most suitable way in the same cell without fear of their being disarranged or injured when the top cover-glass is put on, while both might happen if the whole operation was performed at once. I need scarcely add that the old barbarous method of using the undiluted balsam—a process requiring the aid of a lamp—will not apply here.

For the examination of the saws I find a quarter-inch objective the best; the teeth in some cases are so fine that they are apt to be overlooked if lower powers are used.



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XXXVI. *Descriptions of new Genera and Species of* Heterocerous Lepidoptera *from Japan.** By A. G. Butler, F.L.S., F.Z.S., &c.

[Read November 2nd, 1881.]

## PYRALES and MICROS.

### HYPENIDÆ.

141. *Hypena rivuligera*, n. s.

Fuliginous-brown; wings with a marginal series of linear black dots; a testaceous line at the base of the fringe, which is also spotted externally with pale yellow; primaries darker than secondaries, crossed from costa almost to inner margin by a very irregular lilacine subbasal line; two parallel, very irregularly-sinuated discal lilacine lines; costal area irrorated at intervals with whity brown scales; under surface paler fuliginous-brown; fringe spotted with blackish, and traversed by a dusky line; primaries with greyish white external area; expanse of wings, 1 inch 2 lines.

Tokei (*Fenton*).

Allied to the Indian *H. lacessalis* of Walker.

142. *Gisira hercules*, n. s.

Pale fuliginous-brown, with faint cupreous reflections; wings with the usual undulated outer margin; fringe grey, with a whity-brown undulated line at its base; a submarginal series of black dots; primaries with a broad transverse belt scarcely paler than the ground colour just before the middle, bounded on each side by a dusky-edged distinctly paler line, the outer line interrupted by the reniform spot, which is pale, ill-defined internally, but black-edged externally; a scarcely perceptible discal series of pale spots, half-way between which and the outer margin is an irregularly-sinuated macular black

* Concluded from p. 426, *ante*.



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line limiting the external border, which is slightly paler than the ground colour; secondaries crossed by two ill-defined dusky angulated discal stripes; under surface whity brown; fringe and submarginal dots as above; primaries crossed near the base by a diffused greyish band, an ill-defined line followed by a stripe of the same colour across the middle, and a diffused subangulated discal band; secondaries with a grey-edged lunate spot at the end of the cell, and an arched grey central line; expanse of wings, 2 inches 1 line.

Tokei (*Fenton*).

HERMINIIDÆ.

143. *Rivula subrosea*, n. s.

Has the general aspect of an *Acidalia*; white, sparsely speckled with dark brown; wings above with dull rosy external borders terminating in a ferruginous marginal line; a submarginal series of pale-edged black spots; fringe yellowish, traversed by two ferruginous lines; primaries crossed before the middle by an arched pale yellow stripe, and beyond the middle by a transverse stripe slightly elbowed towards the costa; both of these stripes are imperfectly edged with brown; between them is a black irregular spot representing the reniform spot; a black dot representing the orbicular spot is within the cell; the costal border from the second stripe to near the apex is spotted with brown; a slightly irregular discal series of black spots; secondaries with the rosy tint of the external area diffused over the greater part of the wing-surface; two ill-defined, brownish-edged pale discal lines; head and collar brown, thorax white, abdomen whity brown; wings below widely suffused with rosy ferruginous; internal areas pale creamy yellowish; a submarginal series of black dots; body below pale creamy yellowish; anterior coxæ slightly reddish; expanse of wings, 9 lines.

Tokei (*Fenton*).

The *Bleptina dimissalis* of Walker, the type of which was from Swan River, Australia, was obtained at Tokei by Mr. Fenton; it is allied to *Hydrillodes subbasalis* of Moore, and identical with *Bocana metisalis*, Wlk.

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144. *Locastra elegans*, n. s.

Fuliginous-brown; wings with bronzy reflections; primaries with a broad central area slightly tinted with greenish in certain lights, bounded at basal fourth by a slightly oblique black line, enclosing two black discoidal spots, and bounded outwardly by an arched and elbowed black discal line at external third; a marginal series of black spots; fringe pale, with whitish basal line and dusky spots; secondaries pale, excepting along the apical border, the discoidal area opaline white; fringe whitish, traversed by a dusky stripe; anal tuft whity brown; under surface almost exactly as in *L. amica*; expanse of wings, 1 inch 4 lines.

Yokohama (*Jonas*).

This species is so much more elegant in shape than its congeners, that until lately I failed to discover its affinities, and consequently it remained undescribed; its position is between *L. amica* and *L. inimica*.

145. *Saraca costinotata*, n. s.

Pale olivaceous-brown; basal area of primaries, a broad band just beyond the middle, and an external border with undulated inner edge, slaty grey; a triangular snow-white costal spot at apical third followed by a minute white dot; fringe short, grey, with a whitish basal line; secondaries with the basal three-fifths and the external border slaty grey; under surface pale bronzy brown, with greyish opaline tints in certain lights; primaries with two white costal dots towards apex; expanse of wings, 1 inch 1 line.

Yokohama (*H. Pryer*).

Allied to *S. trimantesalis* (*Egnasia trimantesalis*, Wlk., which should be placed in *Saraca*).

146. *Saraca subviolacea*, n. s.

Greyish brown, with a faint violet gloss; wings with a slender pale-edged marginal black line; primaries with a slender abbreviated black line across the base of the costal border, a sinuous black stripe across the basal third, a rather broad elbowed black band, with sinuated

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outer edge; just beyond the middle, a pyramidal subapical costal black patch separated from the angulated portion of the post-median band by a short oblique lilacine dash; the outer edge of this patch is minutely sinuated and very narrowly edged with whitish, its apex, which is necessarily directed downwards, is connected by means of a series of inconspicuous blackish dots with the inner margin; secondaries crossed just before the middle by a black-edged dusky band, a narrower sinuous band just beyond it across the disc; a small black dot at the end of the cell; primaries below olivaceous-brown, with ochreous costal border; edge of costal margin longitudinally streaked with black; internal area pale silvery greyish; fringe grey, with pale yellow basal line; two parallel transverse discal grey lines, the outer one bounded by a line of creamy yellowish scales; secondaries whity brown; a marginal series of very slender olivaceous lunate lines with whitish external edges; fringe dark grey; two discal lines as in the primaries; body below whitish in the centre; expanse of wings, 1 inch 3 lines.

Yokohama (*H. Pryer*).

147. *Egnasia vasava*, n. s.

Reminds one of *Antigonus vasava* (*Hesperiidæ*); primaries above with the basal fourth mouse-grey, crossed and bounded by two slender irregular white lines; immediately beyond is a very broad irregular belt, grey, with narrow internal and broad external olivaceous borders; discoidal spots inconspicuous, ferruginous; the outer border of the central belt is acutely angulated on the lower radial vein, and bounded externally by a white line and a squamose triangular white costal patch; a rather broad olivaceous discal band separated from an equally broad grey external border by a slender undulated whitish line; costal margin beyond the central belt alternately brown and white; a blackish-edged ferruginous stripe occupies the basal half of the fringe, which is otherwise white, interrupted at the angles of the wing by black-edged grey spots; secondaries with the basal third grey; a rather broad externally undulated black-bordered olivaceous band before the middle enclosing four conspicuous white spots at the end of the cell, three of which spots are larger than the fourth, and

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form a triangle only separated by a slender Y-shaped black character; immediately beyond is a rather broad dentated black-edged grey band, its outer edging imperfect and formed by the confluence of a series of conical black spots edged externally with white; external area greyish olivaceous, inclining to reddish internally; fringe as in the primaries; body above grey; wings below altogether paler, greyer, irrorated with white, the markings ill-defined; a slender black marginal line, disco-cellulars indicated in black; body whitish; expanse of wings, 1 inch 1 line.

Yokohama (*H. Pryer*).

Most nearly allied to *E. athemonalis* and *E. porphyrea*.

148. *Olybama japonica*, n. s.

General aspect of *O. thelephusalis*; primaries above lilacine grey; basal half of costal border marked with three equidistant black spots, between the third of which and the inner margin is a broad diffused blackish brown band; a subapical white-edged zigzag blackish line from costal margin to upper radial vein; a black spot on inner margin close to external angle; a marginal series of black dots; fringe grey, with a slender white basal line; secondaries pale brownish grey; an externally white-edged diffused grey streak from anal angle to the middle of the disc; a slender black marginal line; fringe as in primaries; thorax lilacine grey; abdomen whitish, crossed by grey bands; under surface of wings pale sericeous-grey; a marginal series of black dots; fringe white; primaries with a grey-edged creamy costal patch towards apex; secondaries, when seen with a lens, white, minutely irrorated with grey; a black lunule at the end of the cell; an externo-discal series of subconfluent grey spots; body below sordid white; tarsi dark grey, banded with cream colour; expanse of wings, 11 lines.

Tokei (*Fenton*).

149. *Meranda inconspicua*, n. s.

Primaries above pale chocolate-colour; costal margin dotted with white; an oblique brown-edged whitish line from basal two-fifths of inner margin to the end of the cell, where there is an irregular slaty grey spot; a second

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oblique line from external fourth of inner margin to costa near apex; the upper extremity of this line is washed with grey; fringe traversed by a snow-white line; secondaries whity brown, with diffused darker outer border; fringe with a slender yellowish basal line and a white line close to its outer edge; thorax above chocolate-colour; abdomen whity brown; under surface cream-coloured, the legs above and the borders of the wings washed with sandy yellow; primaries with white internal area; costa dotted with white; secondaries silvery white towards the abdominal area; costal area irrorated with testaceous, an indistinct discal line of the same colour; fringe of all the wings whitish, traversed by a grey stripe; expanse of wings, 9 lines.

Yokohama (*H. Pryer*).

ENNYCHIIDÆ.

150. *Pyrausta chrysitis*, n. s.

Wings above black-brown, with golden reflections; fringe stramineous, becoming blackish towards the anal angles; primaries with some ochreous atoms towards the base; a small oval ochreous spot just beyond the middle of the interno-median interspace, and a large almost diamond-shaped spot at the end of the cell; secondaries with an abbreviated central ochreous band; body blackish; abdomen with the edges of the segments and the anal tuft white; primaries below with the interno-basal area silvery white, base yellow, secondaries with the band continued to the abdominal margin; all the wings with a slender whitish marginal line; pectus silvery; palpi and legs creamy white; venter grey, banded with white; expanse of wings, 9 lines.

Tokei (*Fenton*).

Nearly allied to *P. phœnicealis*, of Europe, but smaller, darker, and more uniformly coloured.

151. *Pyrausta unipunctata*, n. s.

Dark purplish brown; primaries with a subapical costal ochreous spot or transverse dash; secondaries with the fringe slightly touched at the tips with white; primaries below with the subapical spot larger and paler than above; the interno-basal border white; pectus

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pale brown, neck and legs whitish; expanse of wings, 8½ lines.

Yokohama (*H. Pryer*).

Nearest to *P. pygmæalis* of Europe, but larger, the fringes not white, and the band wanting from the secondaries.

152. *Ennychia diversa*, n. s.

♂. Very near to *E. luctualis* of Europe, as large as the female of that species; the white markings of a bluer tint, the spot on the primaries more elongated, cup-shaped, the band of secondaries broader and more distinctly rectangular externally; on the under surface the indistinctly greyish areas of *E. luctualis* are silvery white in the Japanese form; expanse of wings, 1 inch 1 line.

Hakodaté (*H. Whitely*)*.

I have long hesitated to name this insect on account of its close resemblance to the European species; there can, however, be very little doubt that it is distinct.

HYDROCAMPIDÆ.

153. *Cataclysta midas*, n. s.

Above silvery white; wings with black-edged bright ochreous bands; primaries with the costal border clay-coloured almost to the third-fourth, imperfectly divided by whitish spots into three equal parts; an oblique interno-basal clay-coloured dash; the external two-thirds would be most intelligibly described as bright ochreous with black-edged silvery white markings as follows: a triangular spot at the end of the cell, an irregular angulated patch below it, a dot on each side of the latter upon the inner margin; an oblique abbreviated and slightly tapering band beyond the cell and a narrower tapering submarginal band or stripe; fringe silvery, traversed by a leaden-grey line; secondaries with a blackish-edged ochreous spot at the end of the cell and a falciform band of the same colours from the middle of the cell to the internal nervure; an abbreviated black-edged discal area irrorated with blackish scales and

* Owing to a misprint this name is incorrectly spelt with an *e* in some of my earlier papers.



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bounded externally and at the extremities by a marginal ochreous band, on which are five conspicuous black spots speckled with plumbageous scales; fringe greyish, with a dark grey basal line; shoulders, tips of tegulæ, and a series of abdominal bands, pale brown; under surface somewhat as above, but the markings less defined; coxæ and femora brownish at the sides; knees and extremities of anterior tibiæ black; expanse of wings, 1 inch 2 lines.

Tokei (*Fenton*).

Nearest to *C. dominalis* of South India.

154. *Paraponyx turbata*, n. s.

Primaries with the basal two-thirds white mottled with brown, crossed at basal two-fifths by a slender black-edged dentate-sinuate white line, and bounded by a similar line; disc brown; a black-edged submarginal white line, abruptly sinuated just below the apex; external border dull ochreous; a slender black marginal line; fringe whity brown, traversed by a grey line; secondaries white, with a spot near the base of the abdominal border, a subbasal band, two convergent slender central lines, between which is a spot at the end of the cell, and a discal band smoky brown; external border and fringe as in primaries; body brown; under surface white; wings sordid, mottled with pale brown, a marginal series of white-edged black dots; expanse of wings, 10 lines.

Yokohama (*H. Pryer*).

One slightly-worn example is all that Mr. Pryer has sent of this very distinct species.

SPILOMELIDÆ.

155. *Pagyda quadrilineata*, n. s.

Allied to *P. amphisalis* (*Botys amphisalis*, Wlk.), with which it has been confounded, but larger and with four instead of five lines across the primaries; shining ochreous; wings with a slender brown marginal line, the fringe ochreous at base and traversed by a testaceous stripe, outer half of fringe white, tipped with grey on the secondaries; primaries crossed by four nearly straight and almost equidistant slightly convergent dark

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testaceous lines, the third of which does not reach the inner margin; secondaries crossed by two oblique central parallel lines, a third abbreviated transverse line crossing the disc; costal area whitish; palpi, back of thorax, and margins of abdominal segments white; a black longitudinal spot on the last segment; under surface pale shining stramineous, the markings only visible through the texture of the wings; expanse of wings, 1 inch to 1 inch 2 lines.

Yokohama (*Jonas*); Tokei (*Fenton*).

Until I had seen a series of this species I supposed it to be a variety of *P. amphisalis*; the general appearance is similar, although in that insect (of which we have four examples) the five lines on the primaries are all carried across the wing, and the two last unite at their extremities so as to inclose a fusiform area.

BOTIDIDÆ.

156. *Botyodes insignis*, n. s.

♂. Wings even more elongated and narrower than in *B. ussurialis*; greyish brown, with pale cupreous reflections; primaries with the centre of the costal border ochreous, two unequal subquadrate pale yellow spots confluent with the ochreous costal border; an extremely slender whitish marginal line; fringe traversed by a pale stripe; head and posterior margins of the abdominal segments yellow; wings below paler, whitish towards the base; body below pale buff, inner surface of femora pearly white; knees of anterior and middle pairs of legs black; tibiæ of anterior legs banded in the centre with grey; expanse of wings, 1 inch 6 lines.

Tokei (*Fenton*).

PSEUDEBULEA, n. g.

Aspect of *Ebulea*, but with a more robust body, thicker palpi and antennæ; the wings glossy and subopaline; anterior legs short and robust.

157. *Pseudebulea fentoni*, n. s.

Primaries above greyish brown, with a purplish gloss in certain lights; basal half irregularly spotted with pale yellow, scarcely darker than cream-colour, disco-cellulars

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of the same colour, >-shaped; a large irregular patch or abbreviated band of pale yellow just beyond the cell, and confluent with a pale ochreous streak occupying the central third of the costal border; a subapical conical spot, ochreous upon the costal border, pale yellow below it; outer border and fringe irregularly pale stramineous; a marginal series of minute blackish dots; secondaries pale creamy yellow, opaline; a spot at the end of the cell, an irregular oblique subapical stripe; an abbreviated stripe, from the inner margin to the first median branch, the apex and a marginal line smoky brown; fringe traversed by a greyish line, blackish at anal angle; head and thorax smoky brown, crest, under surface of antennæ, and their outer half above, pale stramineous; abdomen grey, anal tuft cream-coloured; wings below paler and more pearly than above, markings partly obsolete, otherwise as above; body below white; legs pearly white; anterior coxæ and femora banded with grey, anterior tibiæ with black; expanse of wings, 1 inch 2 lines.

Tokei (*Fenton*).

The position of this pretty little species is apparently next to the New World genus *Homophysa*.

158. *Anemosa pryeri*, n. s.

Pale bronze-brown, washed with grey; wings crossed by an arched discal black line, and with black fringe; primaries with the centre of costal border and the area between the cell and the discal line rust-red; a blackish arched line across the basal third and a small blackish disco-cellular lunule; primaries below shining greyish brown; costa and a broad externally black-edged arched band beyond the cell whity brown; secondaries sordid white, shining; an arched slender dusky discal line; body below and legs pearly white; expanse of wings, 9 lines.

Yokohama (*H. Pryer*).

The genus *Anemosa* is nearly allied to *Mecyna*, from which it chiefly differs in its more acuminate primaries and the greater distance between the first and second median branches of the secondaries; the three species hitherto recorded are from Australia, New Zealand, and the Hawaiian Islands.

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ÆGERIIDÆ.

159. *Sphecia rhynchioides*, n. s.

Aspect of *Rhynchium brunneum* (an East Indian wasp); wings as in *S. dasypodiformis*, hyaline yellowish white; the veins and costa black, on the primaries with slender longitudinal red lines; the disco-cellulars of primaries red externally; internervular folds and a marginal series of spots continuous with them golden buff; fringe brown; secondaries with the fringe brown, spotted with white; head orange, subopaline, with black posterior margin; antennæ black, reddish at the tips; anterior half of thorax and tegulæ clothed with long appressed ochreous hair; collar and back of thorax purplish black, almost crossed behind by a transverse orange stripe; a second orange stripe along the posterior edge of the metathorax; abdomen with the two basal segments black, edged behind with orange, the three following segments dark orange edged with black, penultimate segment wholly orange; legs black, banded with dull ochreous; wings below with the veins and borders (excepting the costal border of primaries, which is purplish black) dull golden; fringe of secondaries purplish black; body below blackish, with lateral ochreous spots; expanse of wings, 1 inch 4 lines.

Tokei (*Fenton*).

This is one of the best imitations of a wasp that I have seen; when seen in profile the conjunction of the black collar with the ordinarily-formed blackish eye of the moth accurately copies the more elongated eye of the wasp.

GALLERIIDÆ.

CATAPROSOPUS, n. g.

Allied to *Lamacha* and *Murgisca*; wings ample, geometriform, with obtusely angulated outer margins; secondaries with the apex prominent; costal vein of primaries below with a long fringe almost covering the discoidal cell; body moderately robust; palpi long and deflexed, tufted at the base, divergent; antennæ simple, rather short; genitalia prominent.

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160. *Cataprosopus monstrosus*, n. s.

Whity brown, irrorated with black scales; wings crossed by an obtusely angulated slender black line parallel to the outer margin; fringe blackish; primaries with fuliginous costal border; an oblique black line across the basal third; discoidal spots small, blackish; a greyish nebula below the cell half-way between the two black lines; secondaries greyish towards the abdominal margin; thorax greyish; palpi fuliginous; under surface paler and more sericeous than the upper surface, the markings less distinct; primaries with no line at basal third; anterior tibiæ banded above with black; palpi pale below; expanse of wings, 1 inch 3 lines.

Tokei (*Fenton*).

CRAMBIDÆ.

161. *Eromene expansa*, n. s.

♂, ♀. Closely allied to *E. bella* of Europe, but considerably larger; the wings broader in proportion; the primaries whiter, with the fringe alternately metallic-silver, embossed, and white; secondaries with the fringe of the same pale bronzy brown as the remainder of the surface; expanse of wings—male 9, female 13 lines.

Tokei (Fenton).

*E. bella* expands about 8 lines in the male and 9 in the female; the costal and inner margins of the primaries are also straight in that species, whereas in *E. expansa* they are distinctly convex; the male of the latter species, so far as can be judged from a rather rubbed example, seems to differ from that sex of *E. bella*, and from its own female, in having a simple orange stripe in place of the three stripes (orange and metallic silver) across the primaries.

162. *Argyria candida*, n. s.

Silvery white; primaries with convex metallic-silver fringe, showing in certain lights a whitish-bordered grey line; a slender orange marginal line, on which is a series of minute black dots; a 3-shaped gravel-brown marking across the apex; a very slender and widely arched externo-discal line of the same colour, elbowed upon the first median branch, and a slightly sinuated oblique

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stripe just before the middle, angulated and acutely recurved upon the costal border; secondaries without markings, excepting a slender greyish line upon the fringe; thorax with a semicircular gravel-brown marking behind the head; primaries below pale bronze-brown, excepting the externo-discal area, which, however, is interrupted by a brown spot at apex; markings of the upper surface indistinct; fringe tarnished metallic-silvery; secondaries with an abbreviated brown subapical line; otherwise as above; legs brown; expanse of wings, 9 lines.

Tokei (*Fenton*).

Nearest to *A. croceivittella* (*Urola croceivittella*, Wlk.), from Rio Janeiro.

163. *Apurima fulvosparsa*, n. s.

Silvery white; primaries with a black dot at the inferior angle of the cell; external area of the wing sprinkled with ochreous scales, which, above the lower radial, form two convergent lines, the inner one sigmoidal, the outer one straight; apical margin slightly tinted with ochreous; under surface without markings; body cream-coloured; expanse of wings, 1 inch 1 line.

Tokei (*Fenton*).

TORTRICIDÆ.

164. *Steganoptycha granitalis*, n. s.

General appearance and coloration of *S. nævana* of Europe, but the white markings more sharply defined, all of them being bounded internally by black lines; ground colour of primaries whity brown, the second-fourth of costal area, a broad oblique belt from beyond the cell to the inner or dorsal margin, and the apical third silvery white, flecked here and there and edged internally with black; costa crossed by the usual short oblique black dashes; secondaries greyish brown; frons and apex of palpi snow-white; vertex of head black; back of head and thorax ochraceous; abdomen pale brown; under surface shining grey; expanse of wings, 7 lines.

Tokei (*Fenton*).

Apparently most nearly allied to *S. fætorivorans* from the Hawaiian Islands.

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TINEIDÆ.

165. *Nemotois aurifera*, n. s.

*Tinachma* (*Adela*) *fasciella*, Motschulsky (nec *fasciellus*, Fabr.); Bull. Mosc. 1866, p. 39.

Allied to *N. raddellus* of Europe, about the same size and form, but the primaries golden, clouded towards the costa and on the disk with reddish cupreous, the costal border ultramarine-blue; a slightly sinuous bluish-bordered slender yellow transverse band just beyond the middle, and a large circular patch of pale yellow scales upon the disc, and rather nearer to the apex than the external angle; secondaries smoky brown, with a slight purplish gloss; wings below brown, shot with purple, and with a golden marginal line; band of primaries less prominent than above; internal border paler, with silvery marginal line; expanse of wings, 9 lines.

Yokohama (*Jonas*).

Also somewhat like *Adela degeerella*.

166. *Nemotois paradisea*, n. s.

Nearest to *N. decisella*; primaries sparkling brassy golden, crossed before the middle by a broad ochreous belt, bounded on each side by a metallic-silver band; base of costal border purplish; secondaries bronzy brown; head yellow, antennæ with the basal two-fifths black, the remainder sordid white; thorax plumbageous; abdomen pale shining brown; wings below bronzy brown; primaries purplish towards the costa, band of upper surface indistinct, shining like the rest of the wing, but yellowish white rather than ochreous; silver bands obsolete; secondaries with sordid whitish fringe; body below pale brown; palpi ochreous; anterior legs slightly cupreous; expanse of wings, 8 lines.

Tokei (*Fenton*).

This and *N. decisella* are rather broad-winged species; even more so than *N. violella*.

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HYPONOMEUTIDÆ?

PSECADIOIDES, n. g.

Aspect and form of *Psecadia* (*bipunctella*); rather broader; neuration of primaries chiefly differing in the emission of the first subcostal branch near to the base instead of from the middle of the cell; secondaries with the disco-cellulars more transverse; owing to the greater breadth of the wings the discoidal cells are shortened; palpi more like those of *Ypsolophus*, longer and broader than in *Psecadia*, densely scaled, but less so than in *Ypsolophus*, and with shorter terminal joint; antennæ thick, with very robust basal joint.

But for the form of the wings, which is decidedly more like *Psecadia*, I should have placed this genus next to *Ypsolophus*, to which indeed it may have greater affinities.

167. *Psecadioides aspersus*, n. s.

Primaries greyish brown, with greenish reflections, and spotted with black; costal border mottled with silvery white; an irregular oblique band across the basal fourth, a triangular patch at external angle, and a rather irregular external border confluent with the external patch silvery white; a marginal series of black dots; secondaries bronze-brown; head and thorax white; centre of prothorax in front and shoulders bronze-brown; abdomen bronze-brown; under surface brown; pectus silvery, with the legs brown; abdomen sordid white, brownish at anal extremity; expanse of wings, 1 inch.

Tokei (*Fenton*).

GELECHIIDÆ.

168. *Eretmocera ignipicta*, n. s.

Purplish black; primaries with a very broad carmine subcostal streak from near the base to the outer margin, where it meets a narrow stripe of the same colour, which runs round the margin half-way to the base; secondaries dark bronzy brown; head shining, smooth, plumbageous; thorax showing fiery cupreous points in certain lights; abdomen with extremely narrow orange posterior margins to the segments; under surface bronzy brown; primaries cupreous towards the base, purplish



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towards the apex, and with purple costal margin; pectus, as seen between the large coxæ, brilliant opaline; legs slightly opaline along the centre of the inferior margins; the long setose antennæ, and the spines and bristles upon the legs, black; expanse of wings, 8 lines.

Tokei (*Fenton*).

A very beautiful little species of this singular genus.

PTEROPHORIDÆ.

169. *Aciptilus vilis*, n. s.

Size of *A. xanthodactylus*; wings above whity brown, the lobes of primaries minutely irrorated with black; the fringes spotted with white, inferior fringe of upper lobe almost wholly white; costal border snow-white; two black-brown marginal spots beyond the middle of the costa; a >-shaped black marking with white outer border at the end of the cell; body snow-white; under surface pale shining whity brown; fringes varied with white; a white-edged brown >-shaped marking at the end of each discoidal cell; primaries with narrow white costal margin; blackish spots as above; body white; expanse of wings, 10 lines.

Tokei (*Fenton*).

A very distinct species of this somewhat unsatisfactory group of moths; the affinities of the *Pterophoridæ* seem to have been long a problem to Entomologists, their narrow bodies and long spiny legs being somewhat similar in general appearance to those of the *Pyrales*, whilst the palpi are, as a rule, extremely short; the larvæ are hairy, like those of tropical *Zygænidæ*, but the pupa is suspended without a cocoon.

For any Lepidopterist, without evidence, to place the *Pterophoridæ* (not *Alucitidæ*, which, I believe, are not really allied to them) near the *Zygænidæ* would probably be regarded as almost criminal by Entomologists generally; and, although the tropical American genera *Horama* and *Mastigocera* seem to exhibit some affinities to the *Pterophoridæ*, and the venation of the secondaries in males of *Androcharta* somewhat reminds one of them, I still feel that more positive evidence is necessary before locating them there myself; although, unless some happier suggestion can be made, I fear that this is where they will eventually have to settle down. The *Alucitidæ* seem to me more nearly allied to the Deltoids.

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## SUPPLEMENTARY SPECIES.

### LITHOSIIDÆ.

170. *Æmene minuta*, n. s.

Smoky grey, with blackish veins; primaries with a small black reniform spot at the end of the cell; a broad whitish transverse belt before the middle; vertex of head whitish; under surface of wings uniformly smoky grey; legs whitish internally; venter whity brown; expanse of wings, 7 lines.

Yokohama (*H. Pryer*).

### ARCTIIDÆ.

171. *Pharetra leucoptera*, n. s.

Primaries above nearly as in *P. rumicis* of Europe; secondaries creamy white, the base suffused with smoky brown; abdominal border brown; external border broad, black-brown, with bronze reflections, its inner edge zigzag; a white marginal spot on the interno-median interspace; fringe white, sericeous; body almost as in *P. rumicis*, but more robust; the thorax grey, streaked with black; abdomen smoky brown; primaries below greyish brown, the costal border densely irrorated with pale buff, and spotted beyond the middle with blackish; a spot at the end of the cell, and the external border slightly darker than the ground colour; inner border white; fringe white, speckled with black; secondaries snow-white; costal area speckled with blackish; a marginal blackish border nearly as above; fringe white; body sordid white; tarsi black, banded with white; expanse of wings, 1 inch 10 lines.

Yokohama (*H. Pryer*).

Apparently allied to "*Acronycta*" *lutea* of Bremer.

### LIMACODIDÆ.

172. *Aphendala sericea*, n. s.

Pale sordid sandy brown or stone-colour, sericeous; primaries crossed in the middle by a very slightly angulated oblique blackish line, which unites close to costa with a widely-arched discal line running to the first median branch, where it turns abruptly inwards for a

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short distance, then bends again and runs obliquely to inner margin parallel to the inner line; fringe dusky; secondaries with creamy yellowish abdominal border; fringe tipped with blackish; body distinctly greyer than the wings; under surface sordid sandy yellowish; wings sericeous; expanse of wings, 1 inch 2 lines.

Tokei (*Fenton*).

DREPANULIDÆ.

173. *Drepana acuta*, n. s.

Nearly allied to *D. curvatula* of Europe, but much larger, and of a more uniform redder colour above; below with the lines less distinct; otherwise similar; expanse of wings, 1 inch 6—9 lines.

Tokei (*Fenton*).

Our examples of *D. curvatula* measure 1 inch 2—4 lines in expanse.

NOTODONTIDÆ.

PLATYCHASMA, n. g.

Allied to *Lophopteryx*, but differing in having the costal margin of the primaries, from the base almost to the middle, projecting (like a shelf) beyond the true margin of the wing; the projecting lobe of the inner margin nearer to the base, as in *Microdonta*, the outer margin very feebly dentated; the subcostal branches of the secondaries forming a longer fork.

174. *Platychasma virgo*, n. s.

White, sericeous; primaries with a black dot at basal sixth of costa, a second in the cell just beyond the middle, a black <-shaped marking on the disco-cellulars; a large gravel-yellow patch, crossed by an abbreviated black dentate-sinuate line near base of inner margin, and extending into the projecting lobe, and an oblique gravel-yellow band, diffused internally and bounded externally by a slender zigzag black line, crossing the wing beyond the middle; secondaries slightly sordid towards outer margin; under surface white; expanse of wings, 1 inch 5 lines.

Tokei (*Fenton*).

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175. *Phalera fuscescens*, n. s.

Allied to *P. assimilis* of Bremer (*P. ningpoana* of Felder); but much larger, with broader wings, and a much broader cream-coloured apical patch on the primaries, a distinct white spot at the end of the cell on the same wings; primaries above with the costal half grey, excepting at apex, where there is a large irregular cream-coloured patch bounded internally by a blackish lunulate and angular line, which crosses the disc, and externally by an irregularly dentated line; upon this patch is a transverse series of ochreous spots; internal half silvery white, irrorated with grey, and a spot of the same is at the end of the cell; an irregular black line across the basal fourth; a submarginal series of <-shaped black markings, those towards apex bounding two small ochraceous spots; a slender black marginal line; fringe ferruginous, speckled with white; a dusky patch close to anal angle; secondaries pale fuliginous; fringe ferruginous, spotted with white between the veins; body as in *P. bucephala*; under surface sordid cream-colour; primaries widely washed with grey, which is darkest on the discoidal area; secondaries with a stripe across the middle and an anal patch and diffused submarginal streak grey; outer margins of all the wings dusky, and the fringe ferruginous, spotted with white; palpi ferruginous, blackish at the base; legs fuliginous, tarsi banded with white; expanse of wings, 2 inches 7 lines.

Yokohama (*H. Pryer*).

This species and *P. assimilis* may at once be distinguished from the European forms by their smoky secondaries; in this respect they approach the Indian type of *Phalera*.

ENNOMIDÆ.

176. *Calcaritis oberthuerii*, n. s.

Whity brown, speckled with olive-brown and black; primaries with the base of costal border and an angular stripe across the basal fourth black or dark brown; discocellulars black; two very irregular undulated blackish or dark brown stripes beyond the middle, beyond which the disc is white; an oval black patch in the centre of the second median interspace, interrupting the second post-median stripe; external border blackish or olivaceous-brown, interrupted at apex and on second median interspace,

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and spotted with white; secondaries crossed at basal and external thirds by more or less defined undulated blackish or brown lines, between which is a series of more or less defined blackish spots; a white discal band; external border blackish or brown, more or less interrupted; body with a double dorsal series of blackish spots; thorax greyish; under surface altogether paler than the upper surface; expanse of wings, 1 inch 5—8 lines.

Tokei (*Fenton*).

I have named this singular species after the author of the genus.

BOARMIIDÆ.

177. *Tephrosia noctivolans*, n. s.

Pale smoky brown, speckled with black; primaries crossed in the middle by a broad white band, speckled with black towards costa, bounded externally by a dentate-sinuate black line, and crossed in the middle by a similar line (which is however interrupted by a semicircular black-edged spot at the end of the cell); basal area spotted with black; external area crossed by two somewhat confluent undulated black stripes; the outer stripe bordered with grey, which, however, is replaced by white on the median interspaces and towards apex; secondaries with the basal two-thirds white, densely speckled with black, and limited externally by the outer of two parallel central dentate-sinuate black lines; a pale submarginal dentate-sinuate line with dusky inner border, and corresponding with the outer black stripe on the external area of the primaries, but far less distinct; all the wings with a slender black marginal line, and a more or less defined blackish stripe on the fringe; thorax paler than the abdomen, the latter with whitish hind margins to the segments; wings below creamy white, speckled with grey, especially at the end of the cell and on the external area of the primaries; a bisinuated grey discal band on these wings; body pale buff, speckled with grey; expanse of wings, 1 inch 5 lines.

Tokei (*Fenton*).

Somewhat resembles *Boarmia contiguata*, Moore; it is an unusually clearly-marked species.

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FIDONIIDÆ.

178. *Bupalus mirandus*, n. s.

Black; primaries with a pyriform interno-basal spot; a large triangular central patch, a discal oblique series of very unequal patches and dots, and an oblique dash at centre of outer margin, snow-white; costal margin speckled with ochreous; secondaries greyish towards the base; a narrow transverse band just before the middle; a broader discal band parallel to it, and an oblique dash at centre of outer margin, snow-white; head in front ochreous; collar grey, yellow on the shoulders; abdominal segments margined with white; wings below with markings as above, but the black portions more or less irrorated with pale yellow, especially on the costal borders; body below white, irrorated with grey, especially on the venter, which consequently appears to be grey, banded with white; palpi ochreous; tibiæ and tarsi yellowish; expanse of wings, 1 inch 5 lines.

Yokohama (*H. Pryer*).

LIGIIDÆ.

MACROCHTHONIA, n. g.

Primaries elongated, with slightly convex margins; outer margin sigmoidal, with the apex acute; secondaries narrow, longest in costal, shortest in abdominal margin; second and third median and radial veinlets emitted close together at the extremity of the median vein; thorax robust; palpi erect, projecting a little above the head; antennæ very long, extending to third fifth of costal margin, their basal three-fifths broadly pectinated; legs long and very thick, the tibiæ woolly; abdomen rather slender, extending a little beyond the anal angle of the secondaries.

179. *Macrochthonia fervens*, n. s.

Primaries above red-brown, with a slight pink tinge; crossed in the middle by an oblique darker black-edged band; between the central band and the base are two slightly divergent black lines, angulated upon the costal margin; a submarginal zigzag series of black dashes; secondaries pale greyish, with the costal area and fringes white; the external border slightly reddish; head and

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thorax red-brown; metathorax white; antennæ greyish brown; abdomen grey, with paler anal segments; under surface creamy white, reddish at the borders; primaries with the discoidal area widely suffused with grey; fringe greyish; secondaries with the abdominal half uniformly creamy white, not reddish at its borders; coxæ and femora clothed with snow-white hair; tibiæ brown above, white, with a black lateral line, below; tarsi brown, with white bands above, white below; expanse of wings, 1 inch 5 lines.

Tokei (*Fenton*).

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## XXXVII. *Description of the immature state of a Ceylonese insect apparently belonging to an undescribed genus.*

By J. O. Westwood, M.A., F.L.S., &c.

[Read October 5th, 1881.]

Plate XXII., Fig. 1, and details.

The accompanying figure and details represent an immature insect, of which several specimens were taken in the spring of the present year, running about on the surface of the earth in a garden flower-pot covered with very short moss, by G. H. K. Thwaites, Esq., of Fairieland, Kandy, Ceylon, who, remembering the attention which I had formerly bestowed on the species of *Embia*, and thinking this insect was allied to that group, kindly sent me the specimens for examination and description. The specimens were very active, and not easily caught uninjured, and were placed in spirits of wine.

They are narrow, linear, and depressed in form, like a *Staphylinus*, a quarter of an inch long, the body being terminated by two very long slender anal filaments, like those of an *Ephemera*, which are formed of numerous (more than fifty) minute articulations. These filaments are 8 lines long, and are consequently nearly three times the length of the entire insect. The head is depressed and rather larger than the prothorax, with prominent lateral eyes. The clypeus is very short and narrowed, the labrum shortly semicircular and furnished with a frontal row of fine setæ. The mandibles are short, triangular, strong, and armed at the tips with two teeth, the apical one being the larger; the outer edge is rounded and armed with three strong setæ. The maxillæ are regularly galeated, the internal lobe slender, curved, acutely pointed at the tip, below which, on the inner margin, it is rather dilated, and furnished with two setæ; the outer lobe is shorter than the inner, curved and obtuse at its tip. The blade of the maxillæ is oblong, with a series of strong muscles inserted transversely on its inner side; the maxillary palpi are about half the length of the head, five-jointed, the two basal joints very



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short, the three terminal ones cylindrical and of nearly equal length, each being about equal to the outer lobe of the maxillæ in length. The mentum is a transverse thin plate, with the sides rounded and narrowed towards the front margin, which is nearly straight. The labium is formed of two lobes rounded at the tips, each having a slender division or inner lobe uniting in the middle; the labial palpi are cylindrical, each arising from a short basal scape, and are four-jointed, the two basal joints very short, and the two terminal ones longer, subcylindrical, setose, the terminal joint not longer than the preceding, and obtuse at its extremity. The antennæ are about half the length of the body, composed of fifteen cylindrical joints, the basal joint being the largest, followed by four short joints, the remaining being longer, of nearly equal length, somewhat oval in form, and finely setose.

The three thoracic segments are nearly equal in size and rather broader than the abdominal ones; the first, or prothorax, is rounded in front; the second, or mesothorax, is rather shorter, transverse, rounded at the sides, the dorsum entire, without any trace of mesothoracic appendages; the third, or metathorax, is also transverse, rounded at the sides, but with a deep incision on its hind margin, probably indicating the future development of a pair of wings from this segment. The abdomen is formed of a series of depressed transverse joints, the terminal ones gradually narrowed, and the apical one terminated by the long slender articulated filaments above described. The legs are of moderate length and uniform in structure, rather slender, the anterior femora alone being thickened towards the base, and armed with rather strong short bristles on its inner edge. The tibiæ of all the legs are straight and slender, without any terminal spur, and the tarsi are two-jointed, the basal joint larger than the second, which is affixed on the oblique extremity of the preceding joint; the ungues are rather long, slender, and acute at the tips.

The colour has probably been modified by the immersion of the insects in spirits of wine; they are at present dark brown, with the limbs paler, the four posterior femora dusky in the middle; the prothorax has two large pale patches occupying the posterior angles, the emarginate hinder margin of the metathorax is narrowly edged with pale colour; the abdomen is pale-coloured, with two narrow transverse dark bands near the base, and the

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terminal portion of the abdomen is also transversely banded with dark colour.

At first sight the insect in this state at once reminds the observer of the genus *Campodea*, which, like it, runs about in garden ground, and is furnished with two very long anal setæ (*cf. Campodea staphylinus*, Westw., Trans. Ent. Soc. Lond. iii., 232; 1842); but this relationship is quite superficial. The structure of the mouth of the insect brings it to the great division of mandibulated insects undergoing an active state preceding the assumption of the imago form, and possessing galeated maxillæ and articulated filamentous anal appendages. The *Perlidæ*, amongst the Neuroptera, possess these characters, but the terrestial habits of this insect removes it from that family. The structure of the legs and tarsi, and the very elongated anal filaments, separate it from the genus *Embia*, to which its habits assimilate it, whilst its simple hind legs and linear form remove it from the saltatorial *Orthoptera* and *Blattidæ*. In its general form it puts one much in mind of an immature earwig, but the horny exarticulate anal appendages of the *Forficulidæ* prevent us from regarding it as belonging to that family. The discovery of the imago state will alone enable us to determine the group to which the insect is referable.

For the sake of identification, I venture to apply a name to the insect above described, which, from the difficulty attending the present determination of its relations and its most peculiar characteristic, may be termed *Dyscritina longisetosa*.

## Explanation of Plate XXII.

Fig. 1. *Dyscritina longisetosa*, magnified.
1*a*. Natural size of ditto.
1*b*. Head and base of antennæ.
1*c*. Labrum.
1*d*. Mandible.
1*e*. Maxilla.
1*f*. Mentum, labium, and labial palpi.
1*g*. Antenna.
1*h*. Fore leg.
1*i*. Hind leg.

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## XXXVIII. *Notæ Dipterologicæ. No.* 6.—*On the minute species of dipterous insects, especially* Muscidæ, *which attack the different kinds of Cereal crops.*

By J. O. Westwood, M.A., F.L.S., &c.

[Read November 2nd, 1881.]

Plate XXII.

The Cereal crops in this country occasionally suffer to a very considerable extent by the attacks of various minute species of dipterous insects belonging to the families *Tipulidæ* and *Muscidæ*. In the former family, the *Cecidomyia tritici* is especially injurious by depositing its eggs with the assistance of its long telescope-like ovipositor in the centre of the flower of the wheat when in blossom; the small yellow larvæ, hatched from which eggs, eating the pollen, and thus preventing the impregnation of the flower and rendering the ears abortive. The history of this insect was first detailed by the late Hon. President of our Society, the Rev. W. Kirby, in the third volume of the Linnean Transactions, p. 246 (1795), continued in vol. iv., p. 230 (1798), and in vol. v., p. 96 (1799).

The Hessian fly (*Cecidomyia destructor*, Say), fortunately not yet detected in England, and at first regarded as identical with the *C. tritici*, differs from that species in the habit of its larvæ feeding at the crown of the root of the wheat plants, or at the first joint within the sheath of the leaf, where whole clusters of the pupæ are to be found. Say, in Journ. Acad. Nat. Scienc. Philadelph. vol. i., p. 45; Asa Fitch, *The Hessian-fly*, in Trans. N. York Agric. Soc., vol. v. and vi.; and Kollar, 'Treatise on Injurious Insects,' translated by Miss Loudon, p. 118.

Another species of *Tipulidæ*, most probably also belonging to the genus *Cecidomyia*, was described by Dr. John Nep. Sauter, in Germar's 'Magazin der Entomologie,' and in Kollar's 'Treatise on Injurious Insects,' under the name of *Tipula cerealis*, as injuring barley and spelt (a kind of dwarf wheat) in the Grand Duchy of Baden, the vermilion-coloured larvæ measuring one to one and a half lines in length, appearing in May and



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June, and living gregariously between the leaf-sheath and the stalk, and eating the straw, which in consequence becomes warty, notched, and crooked, and afterwards dies.

Several minute species of the family *Muscidæ* are also very injurious to our Cereal crops, which they attack, in their immature state as small footless larvæ, either by feeding upon the heart of the young plants when just above the surface of the ground, or at a later period of the year upon the young and juicy stems, or on the grains and pollen.

As unfortunately there is considerable confusion in the published accounts of the different species of these small *Muscidæ*, and as the works in which such accounts originally appeared are for the most part of difficult access, and the abstracts which have been published of them by compilers have not been sufficiently precise, several of the most important memoirs themselves having been overlooked, it will doubtless be considerably useful to give a short account of the different species and their bibliography.

### *Oscinis Frit.*

The first memoir on the Cereal insects was published by Linnæus in the Transactions of the Stockholm Academy, 1750, p. 128 (translated in the German edition of those Transactions, and published in Band 12, Hamburg and Leipzig, 1754, p. 187) with the title "Untersuchung der tauben Gerste" (barley).

The description of this insect is thus given by Linnæus:—

"Musca Frit, antennis setariis; pilosa, nigra; halteribus, plantis posticis abdomineque virescenti pallidis.

"Linn., Act. Stockholm, 1750, p. 128, ubi historiani dedi. Fauna Suecica, p. 456. (Syst. Nat., p. 994, No. 90).

"*Hab.* Intra glumas Hordei, granum facile decimum quodque destruens unde Frit s. Grana hordei viliora levioraque prognascuntur maximo damno agricolarum "dispendio annuo ultra 100,000 ducatorum aureorum." *Desc.* Magnitudo Pulicis. Corpus figura *M. domesticæ* agilissimum quasi saltatorium nigrum. Oculi fusci. Plantæ posticiæ pallidæ. Halteres pallidi. Abdomen fuscum, subtus magis pallide virens."

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The description given by Fallen (Diptera Suec. Oscinides, p. 7) is more precise:—

Corpus pulice sæpius minus, agile, nigrum nitidum, oculi maximi globosi. Caput antice convexum nigrum; vertice brevissime setoso, macula magna triangulari nitidissima. Antennæ nigræ, seta geniculata. Pedes nigri, tarsis flavo-albis. Alæ abdomine longiores hyalinæ, nervis ut in reliquis hujus sectionis speciebus directis; nervo scilicet 4to longitudinali cum nervo costali in apice alæ conjuncto nervisque transversis paullo distantibus. Halteres albi. *Venter in femina viva pallidus.*

Var. 2. Tarsis pallidis.

Var. 3. Alis nigricantibus tibiis tarsisque albidis in medio nigris.

Var. 4. Metatarso albo.

*Obs.* Ab Oscine maura vix differt nisi magnitudine minor antennarumque seta obscuriore nec distincte alba.

Zetterstedt, in the 'Insecta Lapponica,' col. 781 and 'Dipt. Scandinaviæ,' p. 2646, vol. xi., p. 4337, gives but a short description of *Oscinis Frit*, as follows:—

"Tota nigra, antennarum seta pedibusque concoloribus tarsis pallidis, alis hyalinis halteribus albis. Minutissima vix ½ lin. long. tota nigra nitida halteribus tarsisque præsertim posticis tantum pallidis. In ceteris *O. pusillæ* similis. Oculi in vivo ænei. Varietas, metatarso tantum albo Fall. Dipt. Sv. Oscin. 7, 9, var. 4. Antennarum seta in hac specie nigra vel fusca est.

In the Appendix to his 'Dipt. Scandinaviæ,' vol. xi., p. 4479, Zetterstedt gives Fallen's third variety of *Oscinis Frit* as = *Oscinis pusilla*, Zett., vol. vii., p. 2649.

In Mr. Haliday's memoir on the identification of the Linnean species of Diptera published in the 'Stettiner Entomol. Zeitung,' 1851, p. 144, founded on an examination of the Linnean Cabinet of Insects at the Linnean Society, is the following observation:—"*Musca Frit:* drei exempl. auf Karte gekleft mit einer Puppe =*Oscinis vastator* and *granaria*, Curtis (*Musca hordei*, Bjerkander Act. Holm.).

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*Musca saltatrix.*

Linn., Fauna Suecica, p. 555; Appendix, No. 2319; Syst. Nat., p. 988.

This insect is described by Linnæus as found "in campis inter gramina saliens more Cicadæ." The characters agree with those of a species of *Chlorops* which is very injurious to cereal plants, having the head yellow, with a black triangular spot on the vertex. "Thorax a tergo lineis tribus longitudinalibus nigris quarum intermedia cum capite cohæret, laterales vero a capite distinctæ. Scutellum flavum. Abdomen supra fuscum lineis duabus flavicantibus. *Femora postica crassa.*" (Fn. Suec.).

The last-mentioned character is omitted by Linnæus in his 'Systema Naturæ,' as noticed by Mr. Haliday in his Paper on the Linnean Species of Diptera, published in the 'Stettiner Entomol. Zeitung,' 1851, p. 143; as follows:—

"*Musca saltatrix*, Linn. = *Chlorops tæniopus*, Meig.—Wahrscheinlich hatte Linné dies Stuck vor sich, als er in der Beschreibung im Syst. Nat. (xii., 988, 60) den character "femora postica crassa" aus der Fna. Suec. welcher auf eine *Meromyza* Mg. deutet, ausliess.—Auch Geoffroy (Hist. ii., 508, 31; Ent. Paris, ii., 480, 32, *Musca saltatrix*) beschreibt einen *Chlorops*, Mg."

Fallen thus describes the *Oscinis saltatrix*, "Linn., Fn. 2319, *vera*":—

"Pallide virescens, thorace nigro-tri-lineato; abdomine trifasciam nigro punctato, femoribus posticis crassissimis."—Diptera Suec. Oscin., p. 3.

Zetterstedt ('Diptera Scandinaviæ,' p. 4337), observes, under *Oscinis tæniopus*:—

"*Osc. tæniopus* (*Chlorops ead.* Meig.), in Mus. Linneano sub nomine '*Musca saltatrix*' occurrit (teste Haliday, Ent. Zeit., 1851, p. 143), qui non sine ratione putat Linneum hoc individuum ante oculos habuisse describentem suam Muscam saltatricem in Systema Natur. xii., p. 988, 60 ubi nota illa characteristica 'femora postica' (in 'Fauna Suecica' allata) exclusa fuit."

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In a memoir published in the Transactions of the Stockholm Academy for the year 1777 (German edition, vol. xxxix., Leipzig, 1782, p. 29 *et seq.*), by Clas Bjerkander, entitled "Vom Wurzelinsecte," are contained descriptions of a number of small *Muscidæ* which have been overlooked by subsequent writers. The first of these is—

*Musca secalis* (p. 30), the larvæ of which injure the young rye plants:—

"Die Fliege ist etwas kleiner und dünner, als die gewöhnliche Stubenfliege. Der Leib aschgrau, dünn, mit schwarzen Haaren bekleidet. Die Augen braun, um sie weisse Ränder. Der Rüssel schwarz. Die Füsse haaricht, die ersten Gelenke wie der Körper, die andern schwarz. Die äussersten Enden weiss. Die Flügel roth und grün glänzend. Der Unterleib hat vier Gelenke. Die Balancirstange weiss. Zwischen den Augen kleine Fühlhörner, mit auswärts sitzenden schwarzen Haaren.

"Die Made ist fast weiss, zwo Linien lang, der Kopf spitzig, zu äusserst schwarz, einem solchen Striche V ähnlich. Ohne Füsse; 10 Ringe. Das andere Ende, oder der Schwanz ist gleichsam quer abgeschnitten, doch etwas ungleich. Wegen Mangels der Füsse, kriecht sie nur durch Bewegung der Ringe fort, nachdem sie solche ausstreckt, oder wieder zusammenzieht."

The larvæ remained in that state through the winter, passing to the pupa state at the end of May, and the flies appeared from the 19th to the end of June.

Another species, also injurious to rye, is described by Bjerkander in the same memoir under the name of—

*Musca calamitosa*, Bjerk., *op. cit.*, Germ. ed., xxxix., 32.

"Die Fliege ist sehr klein, Kopf, Brust und Schenkel, schwarz. Hinterleib röthlich, glänzend, mit fünf Ringen. Die Fühlhörner sind anfangs ein kleiner Knoten, wie das kleinste Sammkorn, daran einige kleine Haare sitzen. Die Flügel reichen über den Körper hinaus, liegen an einander, dass sie ein Oval ausmachen, und glänzen röthlich. * * *

"Der Schaden, den die *M. secalis* verursacht, ist an der zarten und nur aufgegangenen Rockensaat sehr sichtbar, sie fällt um und verfault. Aber etwas verborgner ist die Niederlage, welche die hier nachfolgende



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Made verursacht, die später im Herbst, wenn die Rockensaat viel Aestchen angesetzt hat, die zärtesten Blätter abbeisst, die zuletzt gewachsen sind, welche sich gleichfalls noch in den Hülsen befinden, und nur an den äussersten Enden gelb werden, aber wegen der zunehmenden Kälte nicht eher gänzlich vertrocknen, als im folgenden Frühjahre.

"Die Made, von der ich nur jetzo geredet habe, ist gelb, anfangs sehr klein, wie ein Mannakorn, sie wächst aber, dass sie im November eine Linie lang ist. Ihr Kopf ist spitzig, und hat so einen schwarzen Striche V. Aus der Puppa kam *M. calamitosa*."

*Musca hordei*, Bjerk., *op. cit.*, Germ. ed., xxxix., 33.

"Kopf und Vorderleib schwarz, Hinterleib und Füsse grau. Die Flügel länger als der Leib, und weiss, mit drei Adern. Die Fühlhörner schwarz, klein, spitzig, ½ Linie lang. Die Fliege ist sehr klein.

"Die Made weissgelb, über 1 Linie lang, am hintern Ende quer abgeschnitten. Der Kopf spitzig, etwas schwarz, mit dem Striche V. Aus den Maden wurden im Jul. 1776, Fliegen. Die Maden hatten das Frühjahr zuvor meist zur Hälfte an einigen Oertern die Rockensaat verderbt."

In a footnote to the preceeding memoir, Bjerkander describes four other new species of *Muscidæ* which he had reared, preceded by the following memorandum, and which have remained unnoticed by Dipterologists :—

"Maden, die beym hereinbringen von der Rockensaat so sehr klein waren, dass man sie nicht so genau, als man wünschte, unterscheiden konnte, sind noch mehr kleine Fliegen geworden, die hier nur nach ihrer Verwandlung kürzlich beschrieben werden."

"1. *Musca velox*, Bjerk., *op. cit.*, Germ. ed., xxxix., 32.

"Die Fliege eine Linie lang. Kopf schwarz, unten grau. Der Hinterleib hat 4 Ringe, röthlich, am Ende spitzig. Die Flügel liegen an einander. Die Füsse zunächst am Körper gräulich, die äussersten Gelenke schwarz. * * *

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"2. *Musca tripunctata*, Bjerk., *op. cit.*, Germ. ed., xxxix., 33.

"Vorderleib und Brust schwarz. Der Körper haaricht, die Augen braun. Der Hinterleib grau, länglich, mit 2 schwarzen Flecken unten in einer Linie, zu äusserst schwarz. Die Füsse lang, und die vordern weiss an den Enden. Die Balancierstangen weiss. Die Fliegen fingen den 9 Febr. 1776, im Glase aus der Puppe zu kriechen an. Sie zeigten sich zuerst im Junius in den Düngerhaufen.

"3. *Musca truncata*, Bjerk., *op. cit.*, Germ. ed., xxxix., 33.

"Der ganze Körper schwarz, etwas über eine Linie lang. Die Fühlhörner kurz, Perlenschnurähnlich. Der Hinterleib glänzend, wie schwarz Glas, rund, und gleichsam quer abgeschnitten. Die Füsse gelblich. Die Flügel länger, als der mittlere Leib, liegen an ihm an, aber so, dass die innern Seiten einander nicht berühren, sondern ein wenig Raum zwischen sich lassen. Sie krochen im Glase um den 29 Jun. 1776, aus.

"4. *Musca nivalis*, Bjerk., *op. cit.*, Germ. ed., xxxix., 34.

"Eine Linie lang. Die Augen gross und grün. Die Fühlhörner klein mit einigen Haaren am Ende. Der Vorderleib auf dem Rücken haaricht, unten gräulich. Der Hinterleib hat fünf Ringe, glänzend grün. Die Flügel reichen über den Leib hinaus, liegen im Oval, und glänzen roth. Im Glase kamen die Fliegen um den 20 Jun. hervor. Im Nov. 1776, war einmal 13 Grad Kälte, und 4 Zoll tiefer Schnee, gleichwohl fand man diese Fliegen beym Thauwetter unter der Rockensaat den 17 Dec. lebend."

Clas Bjerkander, in another memoir published in the Transactions of the Stockholm Academy for the year 1778, vol. xxxix., pp. 240 and 241 (Germ. ed., vol. xl., p. 231, 'Die Rockenzwergmade'), has a short memoir on another insect which attacks the rye, and, as the species has been much confused, I have thought it better to give the following translation of this memoir:—

*Musca pumilionis.*

In the month of May I observed, among the plants of rye, some dwarf shoots one or two inches long, on

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examining which a small worm or larva was found at the first joint, which had caused this singular enlargement. To observe the transformations of these worms, I placed several in a glass bottle. The larva is white, two lines long, ten-jointed; the head pointed, black at its extremity, with a V-like mark. It changed to a chrysalis on the 25th May. This chrysalis is yellow, shining, rather more than a line long, flat, and ringed. The flies began to make their appearance on the 12th June. The perfect insect is rather more than a line long. Its head is yellow, eyes black; it bears on the vertex a black triangle. The black antennæ are somewhat nodose, with some hairs. The thorax is black above, marked with two yellow longitudinal lines, beyond which, near the abdomen, is a yellow crescent-like spot (scutellum). The under side of the thorax is yellow. The fore legs have two black spots. The abdomen is black above, yellow beneath, and four-jointed. The balancers are white; the wings are glossed with red and green, and extend a little beyond the body. The portion of the legs next the body is greyish, with the extremities black. The fly may be named *Musca pumilionis*. We are still ignorant whether the eggs are laid on the stems of the rye. On the 23rd April the larvæ were still small, and they attained their full size by the 25th May. As there is no hole visible at the side of the straw, it would appear that the eggs or larvæ are deposited on the leaves. When holes are there found, they are made by the larva of *Phalæna secalis* or by some other insect. When the fly emerges from the chrysalis-skin it creeps to the top of the sheath and makes its escape. The stunted rye plants, beginning to assume a yellow colour and dry about the 14th July, were so numerous in some fields that as many as from eight or twelve to fourteen might be counted in a space of four square feet; hence may be seen how great is the mischief they produce, which may be prevented by cutting up and burning the infested plants, and thus destroying the enclosed insects. I have thus cut up as many as 350 shoots.

Fabricius (Syst. Antl., p. 216), simply observes of *Musca pumilionis*, "Habitat in Secalis, Tritici culmis, quos omnino destruit"; but Fallen, in the 'Diptera Suecica, Oscinides,' p. 7, gives a more detailed description and the following explanatory note:—

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"Flavescens; thoracis dorso nigro, flavo bilineato; nervo costali cum nervo 4to longitudinali in apice alæ conjuncto.

"Larva in culmis secalis quos destruit vitam degit a Cl. Bjerkander *l. c.*, descripta. Descriptio autem imaginis in Oscinem et *lineatum* et *Pumilionis* omnino quadrat, nulla ibidem facta de situ nervorum in alis commemoratione. Larva quoque utriusque speciei in culmis segetum s. graminum habitare verisimillimum est.

"Individuum autem e larva culmi secalis natum quod b. m. Bjerkander cum cel Prof. And. Lidbeck communicavit, a nobis lustratum, totum nigrum non hujus est speciei sed *Oscinis Frit.*

"Quin igitur Cl. Bjerkander et larvas plurium *Oscinis* specierum, in culmis forsitan cohabitantes exclusisset et differentiam unius tantum speciei descripsisset, vix dubitanus."

In the year 1780 M. Bjerkander discovered a small Muscideous insect injurious to oats previously unknown, of which he gave an account in the Transactions of the Stockholm Academy, new series, for the year 1781 (German edition, 1784, vol. ii., p. 178). As this memoir has been entirely overlooked by subsequent writers, it is here reprinted from the German translation :—

"Die Made ist gelblich, etwas über 1 Linie lang, am Kopfe spitzig, hat keine Füsse. Die Puppe braun, länglich. Den 14 Jul. kam die Fliege zum Vorschein.

"*Musca Avenæ.* Die ganze Fliege schwarz, glänzend, die Augen bräunlich; die Fühlhörner ein Knoten, von dem einige Haaren ausgehen. Der Hinterleib hat 5 Ringe. Die Flügel reichen über den Körper hinaus, liegen in einer Ovale, und glänzen von rothen und grünen Farben. Die Länge, meist 1 Linie.

"Diese Fliege ist der *Musca Frit* und der *Musca hordei** etwas ähnlich, es ist aber nicht wahrscheinlich dass ein und dasselbe schädliche Thier so vielerley Schaden, und das zu so unterschiedenen Zeiten thun sollte.

"Wenn der Haber anfängt Halme zu bekommen, fangen die Maden an, sie abzuschneiden, erst am untersten Gliede dann an den übrigen. Nur der letzte Schaden, den sie thun, wird dem Landmanne merklich, weil die *paniculæ* vertrocknen und weiss werden."

* Reference to Linn., Act. Holm., 1750, 189.

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A note is added relative to *M. Frit* and *M. hordei*, which Bjerkander regards as identical.

The following communication, dated September 15th, 1881, from J. B. Yonge, Esq., of Otterbourne, Winchester, addressed to myself, introduces us to a minute species of *Muscidæ*, which, from the vast number of specimens observed, must evidently be very injurious to the crops of oats :—

"Sir,—You may perhaps be interested in an unusual abundance of insect-life that has just occurred here. Mr. Dennis, one of the farmers, lately threshed about twenty-five quarters of oats in the field, and stored the grain in bulk in a loft. A few days afterwards a stratum of flies was seen on the top of the oats, coming up among them, and passing away through the windows. The stratum was about four feet long, one broad, and three inches thick, and being continually renewed from below as those above passed off, an immense number must have gone through during the four days it was observed. I enclose a bottle containing a few [about 100] specimens. *The grain does not appear to be injured.* There are a quantity more of the same oats in a rick in the field where they were grown. Would you kindly tell me what is the species of fly, and what its habits, and the food of the larva? Whether it is one of those injurious to corn? and if it would be prudent for the farmer to thresh out the rest of the oats as soon as he can for fear of damage by the maggots; or if there are any other precautions that would be prudent in order to destroy the eggs?"

In Kirby and Spence's 'Introduction to Entomology' (small edition, p. 95), the only insects which attack the oats are said to be the omnivorous wireworm (or larva of *Elateridæ*), and occasionally an Aphis; and Mr. Curtis, in his 'Farm Insects,' mentions *Leucania obsoleta* and *Crioceris melanopa* as feeding on the leaves of standing oats, and that the oat crops in Styria and Carinthia occasionally suffer from the attacks of the larva of a minute *Tipula* or *Cecidomyia* on the grains. Mr. Markwick also found a larva which he considers as that of the wheat midge in the husks of the wild bearded oat, *Avena fatua* (Linn. Trans., iii., p. 246).

Many of the flies which accompanied Mr. Yonge's communication to me were still alive. They are very

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minute, being only about one line in length, and about 2¼ lines in the expanse of the wings. They are black, slightly glossy, and with a very little brassy tinge; the halteres are whitish, the legs entirely black, the wings colourless, or but very slightly ashy coloured, with dark slender veins. The forehead is elevated and rounded, the face slightly emarginate in its profile in front of the eyes, for the reception of the antennæ, which have the principal joint short and semi-rounded, with a slender and slightly setose dorsal bristle or terminal joint. The mouth is a beautiful microscopical object, with two clavate, setose palpi, a strong, short, pointed, horny tongue, and a large fleshy lip notched in the middle of its terminal margin so as to form two lobes, each of which is traversed by three fine curved transversely striated muscles.

This species, although closely allied to *Oscinis vastator*, Curtis ('Farm Insects,' p. 239, pl. H, fig. 11*r*), differs in the colour of the legs, which in the latter insect have the base and tips of the four anterior tibiæ ferruginous, the base of the first joint in all the tarsi of the same colour, whilst the legs are uniformly black in Mr. Yonge's insects. From this slight difference I was led to infer that the habits of the latter were identical with those of Mr. Curtis's insect, and that its larva fed on the stems of the oats. This supposition was, however, contradicted by the fact that the flies had only made their appearance after the grain had been threshed out in the field and the oats stored in the loft. At all events, the mischief, whatever it might have been (and Mr. Yonge says that the grain did not appear to be injured), had been done, and no more damage was to be apprehended from the flies, which were making their appearance in such incredible numbers. Finding, however, in the bottle which contained the flies, two or three grains of the oats, I opened them carefully, and found, within the enveloping scales of one of the grains, the remains of an Aphis, and within another (in which the grain itself had disappeared) there remained only the shrivelled feathery styles of the ovary, above which was the empty scaly elongate-ovate covering of the puparium of one of the little flies, which had left the grain and joined its companions in their escape from the loft. Thus the cause of the appearance of these flies after the grain was housed was accounted for, and the species was proved to

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agree with *Cecidomyia tritici* in the habit of feeding upon the young grain, and not within the stem of the plant like the *Chlorops lineata*. Hence we learn that, instead of the housed grains being uninjured, as was stated, each fly must have destroyed one of the oat-grains, remaining within the scales until the crop had been housed. Hence, too, we also learn that if it were possible to submit the grain, as soon as threshed, and before being housed, to the action of a degree of heat sufficient to kill the flies without injuring the grains, the chances of next year's crop of oats being freed from the ravages of the insect would be greatly increased.

The insect before us appears to me to be identical with the *Musca avenæ* of Bjerkander, and with *Oscinis atricilla* of Zetterstedt ('Ins. Lapponica,' col. 781, No. 11*). The latter is the only one of the sixty species of the genus described by Meigen, Fallen, or Zetterstedt, with which it can be compared.

*O. atricilla* is stated by Zetterstedt to have the greatest resemblance to *O. pusilla*,† which, I believe, is identical with the *Oscinis vastator* of Curtis, differing in being blacker and less metallic in colour, and in having the anterior tibiæ and tarsi blackish brown, whereas they are black in my insects.

The 'Transactions of the Linnean Society of London' (vol. ii., p. 76, 1794), contain a memoir entitled "Some Account of the *Musca pumilionis* of Gmelin's Edition of the 'Syst. Naturæ.' By William Markwick, Esq. With additional remarks by T. Marsham, Esq." Early in spring some fields of wheat near Battle appeared to be much blighted, the injury being caused by a small grub lodged in the very heart of the stem just above the root; from some of the diseased plants placed in a flower-pot, and covered with gauze, several small flies were produced. The plants thus attacked threw out

* *Oscinis atricilla*, Zetterstedt, 'Insecta Lapponica,' col. 781, No. 11.

Tota nigra, antennarum seta pedibusque concoloribus, alis hyalinis, halteribus albidis. Mas, fœm.

Magnitudo et summa præcedentis (*O. pusillæ*) similitudo, a qua non differt nisi colore magis atro, vix metallice nitente, et pedibus totis nigris, tibiis tarsisque anterioribus nigro-fuscis.

† *O. pusilla*, Zett., *l. c.*, col. 781, No. 10. Subænescenti nigra tota, antennarum seta concolore, tibiis anterioribus tarsisque omnibus pallidis; alis hyalinis, halteribus albis. Mas, fœm.

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side shoots abundantly, thus *stocking* themselves, as the farmers term it. No precise description of the insect was given, but in the accompanying plate the insect was represented in its different states, exhibiting the head of the fly marked with a triangular black spot; the thorax black, with two yellow longitudinal streaks; the scutellum yellow, and the abdomen pale-coloured. The subsequent proceedings of the fly and its progeny were not described. From Mr. Marsham's supplemental note it appears that Sir Joseph Banks had also reared the fly from the roots of diseased wheat, and had determined it to be identical with the *Musca pumilionis* of Bjerkander, and by letter communicated the information to Mr. Arthur Young, accompanied with an engraving of the fly, both of which were published in the 91st number of the 'Annals of Agriculture.' Mr. Marsham comments on Bjerkander's account, and speculates on the subsequent proceedings of the fly, which he recommends to the observation of farmers, shrewdly adding that, as the plant throws off side shoots abundantly, Bjerkander's advice to pull up and burn the damaged plants cannot be considered as judicious.

In the year 1812 the Agricultural Society of the Seine was officially consulted by the Minister of the Interior on the subject of the very extensive injury to cereal crops in different parts of France, and especially in the neighbourhood of Paris, by the attacks of insects. The celebrated entomologist M. Olivier was accordingly charged by the Society to investigate the history of the insects in question, and he published a *first* memoir on the subject in the 'Actes de la Société,' tom xvi., p. 447. His death, however, prevented his further researches, and those of M. Victor Audouin, who subsequently undertook to prosecute the subject, were in like manner cut short by the premature death of the latter.*

Olivier (Mém. sur quelques insectes qui attaquent les Céréales) gave short descriptions and excellent figures of several of these species of cereal *Muscidæ*, which (with one exception), have been overlooked by subsequent

* It is greatly to be regretted that the numerous volumes of observations on the economy of many species of insects made by M. Audouin, accompanied by excellent drawings, still remain unpublished.



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systematic Dipterologists. The first of these is named *Chlorops pumilionis* (p. 4, pl. i., fig. 2), and is identical with the insect figured by Guérin as *Chlorops lineata*. Olivier reared it from cereal plants which he had placed in bottles in April in the preceding year. "C'est le Diptère qui est sorti le plus abondamment des tiges du seigle, et de l'orge qu'elle paroît attaquer plus particulièrement que les froment, quoiqu'elle se trouve aussi quelquefois dans ces derniers."

*Tephritis Hordei.*

Olivier, Mém. sur quelques ins. qui attaq. les Céréales, p. 12, pl. i., f. 1.

"Antennis plumatis; nigro-ænea, capite argenteo, palpis flavis. Long. 3—4 mill.

"Antennes noires; corps noir bronzé, légèrement couvert d'une poussière imperceptible grise. Tête et thorax avec des poils roids, noirs, assez longs; yeux vert brillant un peu foncé, noirâtres après la mort. Tête couverte d'un léger duvet argenté; ailes transparentes, un peu irisées, balanciers jaunes."

Reared in a bottle in which diseased plants of barley, rye, and wheat had been placed at the beginning of April.

*Oscinis flavipes.*

Olivier, Mém. sur quelques ins. qui attaq. les Céréales, p. 14, pl. i., fig. 3.

"Nigra; abdomine basi rufo; pedibus flavis (cuisses presque entièrement noires). Long. 2 mill."

Two individuals reared in a bottle in which diseased plants of barley, rye, and wheat had been placed at the beginning of April.

*Oscinis nigra.*

Olivier, Mém. sur quelques ins. qui attaq. les Céréales, p. 15, pl. i., fig. 4.

Corpore nigro, immaculato. Long. vix 2 mill.

"Filet des antennes simple. Corps noir, luisant, à l'exception des balanciers qui sont d'une jaune obscur."

Reared in a bottle in which diseased plants of barley, rye, and wheat had been placed at the beginning of April.

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*Tephritis pallisa.*

Olivier, Mém. sur quelques ins. qui attaq. les Céréales, p. 15, pl. i., fig. 5.

Corpore pallide cinereo, antennis plumatis. Long. vix 2 mill.

"Corps couvert de quelques poils longs, d'un brun clair; les balanciers sont de la couleur du corps; les ailes sont proportionnellement un peu longues que dans les autres espèces, et ont un reflet irisé."

Reared in a bottle in which plants of barley, rye, and wheat had been placed at the beginning of April.

*Leptocera nigra.*

Olivier, Mém. sur quelques ins. qui attaq. les Céréales, p. 15, pl. i., fig. 6.

"Nouv. gen. Par la longueur du filet des antennes il se rapproche du g. *Trineura*, mais les deux premiers articles sont bien distincts, tandis qu'ils ne forment qu'une boule dans les *Trineura*. Dans la *Trineura* les trois nervures longitudinales vont de la base à l'extrémité sans qu'on aperçoive aucune nervure transversale. La disposition des ailes dans le n. g. dont les nervures internes ne vont point jusqu'à l'extrémité, et s'arrêtent au milieu, et oú l'on voit de plus deux nervures transversales, l'éloigne aussi des Tephrites, des Oscines, et des Mouches, avec lesquelles ce genre a quelques rapports par la forme du corps et celle des deux premiers articles des antennes.

"*L. nigra:* ore pedibusque fusco-rufescentibus. Long. 2 mill. Antennes noires, le filet long, très-menu, simple, la tête est noire en dessus, le front et la bouche sont d'une couleur de brique obscure; le corps est noir garni de quelques poils; on en voit deux ou trois sur l'écusson plus longs et plus forts que sur le reste du corps; les balanciers sont de la couleur des pattes. Les ailes différent de toutes celles des autres diptères; la seconde cellule placée vers le milieu est fermée, et les deux nervures qui devoient se prolonger jusqu'à l'extrémité des ailes sont à peine commencées."

Seven specimens reared in a bottle in which diseased plants of barley, rye, and wheat had been placed at the beginning of April.

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In the 'Mémoires de la Société d'Agriculture du Département de la Marne,' for the years 1837, 1839, and 1841, M. Dagonet, of Chalons, published a series of articles on insects injurious to cereal plants, accompanied by rude figures, in which he gave a general account of the economy of the species of *Chlorops* which causes the swollen stems of the wheat, to which he applies the name of *Musca pumilionis*. His observations, however, are not so complete and descriptive as those of M. Herpin.

The observations of Olivier were subsequently resumed by M. Herpin, of Metz, whose memoir was published in the "Mémoires de la Société royale et centrale d'Agriculture, Année 1842." In that memoir M. Herpin described the economy of the following insects: "1, De l'Oscine ou Chlorops du froment et du seigle; 2, Oscine ou Chlorops de l'orge; 3, le Sirex ou Cephus du froment et du seigle; 4, De l'Apion ou Charançon du trèfle; 5, De l'Alucite ou la Teigne des blés; 6, De la Noctuelle et de la Cecidomyie des céréales."

The first of these insects appeared to M. Herpin to be identical with Olivier's No. 1, but various important details in its history were observed for the first time by the later writer. The plants attacked by the larvæ in the winter and early spring become yellow and die, the larvæ, which had eaten the heart of the plant, transforming to the chrysalis state, from which the perfect insect is developed at the end of April or beginning of May. The writer proceeds:—

"L'accouplement de l'Oscine sortie des jeunes plantes de seigle et de froment a lieu vers la fin de Mai ou au commencement de Juin. La femelle s'occupe aussitôt à faire sa ponte sur les tiges du froment qui commence alors à monter en *épis*; elle dépose un œuf vers la partie inférieure de l'epi, au fond des cannelures des feuilles. Environ quinze jours après la ponte, il sort de cet œuf une larve oblongue, jaunâtre et sans pattes, qui s'attache à la tige de la céréale, immédiatement au-dessous de l'epi; elle se nourrit en rongeant une partie de la surface de chacune qui est alors très-tendre; elle y trace et y creuse un sillon extérieur de 2 millimètres environ de largeur, de 1 millimètre ou 2 au plus de profondeur, mais qui ne pénètre jamais jusque dans le canal interieur de la tige. Ce sillon s'étend depuis le bas de l'epi jusqu'au premier nœud supérieur, sauf quelques exceptions, lorsque, par exemple, la larve vient

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à périr ou qu'elle a pris tout son développement avant d'avoir atteint le premier nœud. Arrivée près de ce point la larve a ordinairement acquis toute sa croissance ; alors elle se transforme en nymphe ou chrysalide, et se fixe le plus souvent vers la partie moyenne du sillon qu'elle a creusé à l'extérieur de la tige. Dans le mois de Septembre suivant, il en sort un Diptère du genre *Oscinis* d'Olivier ou *Chlorops* de MM. Meigen et Macquart, que peut vivre pendant plusieurs semaines, et va déposer ensuite sa nouvelle ponte sur les seigles et les blés tout récemment semés. Les tiges du froment attaquées par les larves provenant de la deuxième ponte du *Chlorops* presentent des altérations tellement singulières et remarquables, qu'il est surprenant que l'on n'en ait pas jusqu'a présent reconnu la cause ; ces altérations sont généralement attribuées à un vice de la végétation ; occasionné par certaines intempéries des saisons. Les tiges ainsi attaquées n'ont guère que la moitié de l'hauteur des tiges de blé qui sont saines, leur maturation est retardée considérablement ; elles sont encores très-vertes lorsque les autres sont devenues jaunes par l'effet de la maturité ; l'épi n'est pas encore sorti d'entre les feuilles qui l'engainent ; il est court, peu volumineux, peu abondant en grains ; ceux-ci d'ailleurs sont maigres, retraits et racornis ; enfin tous les épillets situés du côté où se trouve le sillon longitudinal creusé par la larve sont entièrement avortés, et ne contiennent aucun grain."

The species observed by M. Herpin is attacked by Hymenopterous parasites of the genus *Alysia*.

The "*Oscinis* ou *Chlorops* de l'orge" (*Hordeum distichon*) is considered by M. Herpin (Mém., p. 18), to be identical with the *Musca Frit* of Linnæus. It "parait être le même que celui qui dévore les tiges du blé ; il y produit les mêmes altérations et creuse à l'exterieur de la jeune tige un sillon longitudinal au dessous de l'épi."

M. Herpin further observes :— "Outre cet insecte (*Chlorops* de l'orge) l'orge est attaquée par les larves d'un autre *Chlorops* bien plus petit que le précédent, qui sont au nombre de six à dix dans chaque épi, elles rongent les organes sexuels des fleurs, et font avorter la fructification de telle sorte que les épis sont tout à fait stériles. Souvent aussi on trouve sur le même pied d'orge le premier *Chlorops* qui ronge la partie supérieure de la

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tige, et plusieurs autre petits *Chlorops* de la second espèce qui dévorent l'épi. Ces deux espèces se comportent, pour leurs métamorphoses, de la manière qui a été indiquée plus haut."

The Memoir of M. Herpin was accompanied by a Supplemental Memoir by M. Guérin-Méneville, illustrated with six coloured plates. In this memoir the first species described by M. Herpin, and incorrectly referred by Olivier and Dagonet to the *Musca pumilionis* of Bjerkander, was affirmed to belong to the genus *Chlorops* ("tandis que l'autre est une *Oscinis*"), and was described under the name of *Chlorops lineata*.* "Flavicans; antennis, vertice macula triangulari, thorace vittis quinque nigris; abdomine flavo, fasciis punctisque duobus basalibus fuscis, ano flavo, pedibus flavis, tarsis anticis nigris, intermediis et posticis flavis, duobus articulis ultimis atris. L. 0·0004; l. 0·001¼." †

The second species, whose habits were noticed by M. Herpin, was described by M. Guérin (Mem., p. 30) under the name of *Chlorops Herpini*, "Flavicans; antennis nigris vel flavis, margine antico setaque nigris, vertice maculis duabus nigris triangularibus; thorace vittis tribus latis nigris; abdomine flavo, fasciis punctisque basalibus fuscis, ano nigro; pedibus flavis tarsis omnibus fuscis. L. 0·003; l. 0·001."

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* *Oscinis lineata*, Fabr. Antl., 215, 4; Latr., Le Règne, An., p. 647; *Musca l.*, Fabr., Ent. Syst., p. 356, 180; Fallén, Dipt. Suec. Oscin., p. 4.

"♂ et ♀. Larva in caulibus cerealibus, quos destruit, habitat. Conf. auctores citati. Imago in agris demessis copiosissime.

"Flavicans, thoracis lineis tribus nigris subcohærentibus; pedibus simplicibus."

*Olivier*, Mém. sur quelques insectes qui attaquent les Céréales, p. 4. "Obtenu des tiges de froment presque mûres."

† The following synonyms were added:—

*Musca flava*, Linn., Fn. Sv. 327; Geoffroy, ii., 537.

*M. lineata*, Fabr., De Vill., Schellenberg; Latreille (N. Dict. d'hist nat., &c.); Olivier (Enc. Méth., viii., 35); Fallén, Dipt. Suec. Oscin., p. 4.

*Oscinis pumilionis*, Olivier, Mem. Soc. r. Agric. Dagonet, Mém. Soc. Agr. Marne, 1841.

*Chlorops nasuta*, Meigen, Macquart, Hist. Dipt. ii., 592.

*C. tæniopus*, Meigen (var. præced.)

*C. glabra*, Westwood, Gard. Mag. xiii., 289.

The synonymy of these quotations was discussed at great length by M. Guérin.

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In Loudon's 'Gardener's Magazine,' vol. xiii. (1837), p. 289, I published an article on wheat-flies, giving an abstract of the memoirs of Bjerkander, Markwick, Marsham, Fallén, and Olivier, and recording the fact that I had received from Mr. Raddon, about the middle of April preceding, several species of a *Chlorops* in the winged state (which I considered to be identical with the *C. glabra* of Meigen, but which is certainly the same insect as is figured by Olivier as *O. pumilionis*, by Curtis as *C. tæniopus*, and by Guérin as *C. lineata*), which had been found in great profusion amongst wheat whilst removing it from the rick in which it had stood through the winter. This is an important point gained with respect to the economy of these flies, showing that the pupæ must have been carried with the upper part of the straw to the rick where the flies had hatched, either in the autumn or early spring. The former is more probable (the flies remaining in the rick till the spring), because it is of common occurrence to observe these little flies in our apartments during the autumn, at which period, in 1834, "they literally swarmed in the houses in the immediate neighbourhood of the metropolis, the white ceilings of rooms appearing quite discoloured by their numbers" (p. 293).*

In this article I further mentioned that I had received, from D. Sharp, Esq., F.L.S., a fly twice the size of those from Mr. Raddon, which he had reared from wheat in Huntingdonshire, that was attacked when six or eight inches out of the ground by the larvæ, which devoured the centre of the stem, and so killed the plants. It is not shining like the *Chlorops* from Mr. Raddon, and the yellow marks on the thorax are less conspicuous; the tips of the femora, as well as the tibiæ and tarsi, are brown. The veins of the wings are arranged as in Mr. Raddon's *Chlorops*.

In Dr. Lindley's 'Gardener's Chronicle' for 1848, pp. 780 and 796, I published two articles on wheat-flies, especially describing their attacks on the wheat plants, causing swellings of the base and centre of the plants.

There are also articles in the last-mentioned work for 1846, p. 596; and 1856, p. 158, by Mr. Curtis.

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* In the Berlin. Ent. Zeitschrift, t. i., p. 172, 1857, large swarms of *Chlorops nasuta* are described.

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Notes on *Chlorops lineata* by Isidore Pierre, with a report thereon by Milne-Edwards, appeared in the 'Comptes Rendus' of the Academie of Paris for 1848.

An article by the late Andrew Murray on *Chlorops tæniopus* appeared in the 'Gardener's Chronicle,' 1870, p. 1578.

In the valuable series of articles published in the 'Journal of the Royal Agricultural Society of England' by the late Mr. Curtis, subsequently republished in his fine volume, 'Farm Insects,' Chapters viii. to xi., are devoted to various insects injuring the corn crops. The memoirs of Bjerkander, Markwick, Herpin, Guérin-Méneville, and Dagonet are abstracted, and an account of the mischief done by the insects figured by Olivier, and Guérin-Méneville, as *C. lineata*, and by myself as *C. glabra*, is given under the name of *Chlorops tæniopus*, the writer doubting whether the insect is a variety of *C. lineata*, as supposed by Guérin. Mr. Curtis adds descriptions and figures of a very small black species of *Oscinis*, to which he gives the name of—

*Oscinis vastator* ('Farm Ins.,' p. 239).

The larva is very small, and feeds in the stem of the wheat plants, and, on the 5th and 20th July, perfect flies were produced. "This appears to be a much more formidable enemy than the *Chlorops*, for the ten or twelve stalks I opened were filled only with powder at the base, every portion of the young ear being consumed."

The length of *O. vastator* is three-quarters of a line, and the expansion of the wings two lines. It is shining greenish black, a large shining triangular space on the crown; face smooth and not concave, as in *Chlorops*; thorax globose, quadrate, with a scarcely visible ochreous pile, forming very indistinct lines in perfect specimens, and an impression on the disc; scutellum semi-ovate, terminated by two bristles, and finely rugose; abdomen short, not so broad as the thorax, rather depressed, ovate-conic, and five-jointed; wings transparent and iridescent, but slightly smoky, the costal nervure extending beyond the submarginal one to the mediastinal nervures; all the nervures pitchy, the two transverse ones not very remote; balancers with an oval ochreous club; legs longish and slender; base and tips of the four anterior tibiæ ferruginous; in the male the base of the first joint in all the tarsi is of the same colour.

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According to Mr. Haliday this insect is identical with the *Musca Frit* of Linnæus. It is certainly closely allied to *Oscinis pusilla* of Fallén and Zetterstedt.

*Oscinis granarius*, Curtis ('Farm Ins.,' p. 298).

Black and shining, with a greenish cast; head transverse, semi-orbicular; antennæ black and orbicular, with a short pubescent seta. Eyes large, remote, oval; thorax nearly quadrate; scutellum semi-globose; abdomen of the female ovate-conic, apparently 5-jointed; wings transparent, iridescent; nervures dark, exactly like *O. vastator;* balancers with ochreous white club; legs black (?), the first pair lost, four posterior, with the basal joint of tarsi, dirty ochreous, and tip of intermediate tibiæ of same colour.

Reared from a grain of wheat of a rosy colour, from which the farina had been squeezed out possibly in picking it from the ear. It was of a pink colour, and from amongst it protruded an empty pupa-case of a rusty ochreous colour, from which the fly had been produced.

Distinguished from *O. vastator* by the base of the shank being black instead of ferruginous.

"Neither is it the *Musca Frit* of Linnæus, which I doubt not is a *Chlorops*."

*Oscinis pusilla*, Meigen.*

In a memoir published by Herr Kuhn in the 'Mittheilungen des landwirthschaftlichen Centralvereins für Schlesien' (1859), x., p. 135, an account is given of the injury committed by this little species on rye and white wheat. "Sie lebt in Gesellschaft mit *Musca Frit, Cereris*, &c., mit welcher in ihrer Wintergeneration aus Roggen und Weizenpflänzchen erzogen wurde, und kommt entschieden mit ihr auch an Wiesengräsern vor."

M. Boisduval ('Les insectes nuisibles,' 1862, p. 282), describes the history of *Cecidomyia tritici* and its parasites, *Oscinis vastator*, Curt., *Chlorops lineata*, Guér., *C. tæniopus*, Meig., *C. Herpini*, and *C. pumilionis*.

* "Nigro-ænea, femoribus nigris tibiis tarsisque pallidis; scutello plano. Wahrscheinlich ist diese Art, *Oscinis Frit*, Fall. Var. 3, tibiis tarsisque pallidis." Meigen, vi., p. 157.



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Taschenberg ('Naturgesch. d. wirbellosen Thiere,' 1865), describes the following *Muscidæ* as injurious to cereals:—*Chlorops tæniopus*, *C. strigula*, Fabr., *C. lineata*, *C. nasuta*, *C.* (*Oscinis*) *Cereris*,* *Oscinis Frit*, *O. pusilla*, and *Siphonella pumilionis*.

Lastly, in the 'Bulletin de la Société impériale des Naturalistes de Moscou' for 1880, No. 3, p. 126, is contained an interesting memoir by Prof. K. Lindeman, upon "Zwei neue dem getreide schädliche Insekten Russlands," namely, 1, *Eurytoma hordei* of Walsh, the larvæ of which produces dilatations on the stems of rye (hence known under the name of the knot-worm); and 2, *Cecidomyia cerealis*, the larva of which appears to be identical with the insect known in North America under the name of the joint-worm.

## Explanation of Plate XXII.

Fig. 2. *Oscinis avenæ*, Bjerkander, magnified.

2*a*. Natural size of ditto.

2*b*. Head of ditto, seen sideways.

2*c*. Parts of mouth, highly magnified, showing the clavate setose palpi, the acute horny tongue, and the large bilobed lip.

2*d*. Parts of mouth, highly magnified, displayed by vertical pressure.

2*e*. Mouth and antenna of ditto, magnified, seen partially sideways.

3. An oat with the outer scales removed.

3*a*. Ditto, with the inner scales opened, showing the withered plumose style (*a*), and the empty shell of the *Oscinis* pupa (*b*).

* *Osc. Cereris*, Fallén, *op. cit.*, p. 5. "Nigra nitida; fronte, pectore, scutelloque albis, pedibus testaceis."

Another species is described by Fallén under the name of *Osc. messoria*, *op. cit.*, p. 5, which is evidently connected with cereal plants:—"Nigra, nitida, capite albo, pectore flavo vario, genubus tarsisque testaceis. Hab. In agris demessis Scaniæ sat frequens."

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## XXXIX. *Descriptions of new species belonging to the Homopterous family* Cicadidæ. By W. L. Distant.

[Read December 7th, 1881.]

The following descriptions are offered to the Society, anticipatory of a future monographic revision of the *Cicadidæ*, a family which has perhaps been the more neglected owing to the involved nature of the work in which the fine collection of these insects contained in the British Museum were described. This, therefore, renders an examination of Walker's types indispensable, and, from the nature of that author's descriptions, it is questionable whether without such comparison any work could be effected without being more or less surcharged with synonymy. As regards the last subject, I have incorporated none of my collected notes here, preferring to publish them subsequently in a more complete form.

In the descriptive nomenclature which I have here adopted, and which I have followed and similarly explained when treating the Central American fauna (Biol. Centr. Am. Rhynch. Hom., p. 1, 1881), the following should perhaps be clearly stated.

For the venation of the tegmina I have followed Stål, but differ from that author in the use of the term "scutellum," which in my opinion is the "mesonotum," and in which view I am supported by Burmeister and Westwood. The "scutellum," as used by Germar, apparently equals the "metathoracic cross" of Uhler, and is considered here, in agreement with Burmeister, and, as may be proved by easy dissection, as part of the mesonotum, and is here alluded to as the "basal cruciform elevation" of the same. I have also followed Westwood in the numeration of the abdominal segments, of which six are acknowledged, the basal one being described as first and the apical one as sixth.

Of the species here described, three are Neotropical, three Ethiopian, thirteen Oriental, one Palearctic, one Australian, and one from the Pacific region.



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*Zammara columbia*, n. s.

Body above dull testaceous, variegated with fuscous and pale markings. Head dull greenish, with a transverse fuscous fascia between eyes, enclosing ocelli; eyes ochraceous. Pronotum with the lateral and posterior margins, and a central narrow longitudinal fascia, ochraceous; base of the last somewhat dilated and bordered with fuscous; lateral margins with a large irregular spot near anterior margin; extreme edge behind angle and an irregular spot near posterior margin dull testaceous. Mesonotum with two obconical and contiguous spots reaching midway from anterior margin, bordered outwardly with ochraceous, and with their inner two-thirds fuscous; on each side of these, and immediately adjoining, is a dentate fuscous spot bordered with ochraceous; lateral margins greenish, with the extreme edge luteous. Abdomen with the posterior segmental margins fuscous. The head and thorax above is sparingly clothed with yellow, the abdomen with hoary pilosity. Body beneath paler, sternum greenish, abdomen testaceous; lateral margins of prosternum marked with fuscous as above. Coxæ and femora greenish; trochanters, bases and apices of femora beneath, fuscous; tibiæ pale testaceous, with the bases and apices of fore and intermediate tibiæ and tarsi and bases of posterior tibiæ fuscous. Rostrum pale testaceous, with the apex fuscous. Tegmina pale ochraceous hyaline; with the veins, costal membrane, and costal area, dull testaceous or greenish, and the following fuscous spots: one at end of clavus, another at the end of radial area, and a series situated on inner and outer margins of apical areas; outer margin of clavus fuscous. Head between eyes less than half the width of pronotum, with a distinct narrow, central, longitudinal sulcation between ocelli; face moderately convex, obscurely striate on lateral margins, and sulcated at apex, its width about equal to its distance from outer margin of eyes. Lateral margins of pronotum considerably ampliated, and subacutely angulated. Tympana greenish, dull testaceous inwardly, large, prominent, with the dorsal lateral margins reflexed; opercula small, rounded, not meeting in front; rostrum just passing posterior coxæ, and terminating between opercula. Abdomen very broad, and somewhat flat-

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tened; tarsi three-jointed. Long. 28 mm. Exp. tegm. 91 mm.

*Hab.* Colombia; Medellin.

This species is nearest allied to *Z. nigriplaga*, Walk., from which it differs by the narrower and less expanded pronotum, the three-jointed tarsi, &c.

*Odopœa jamaicensis*, n. s.

♂. Body pale greenish, varied with black markings, and sparingly pilose. Head with the anterior and posterior margins of front, a spot on each side above insertion of antennæ, and a broken transverse fascia across vertex between eyes enclosing ocelli, black. Pronotum with an oblong spot near centre of anterior margin; a central ⊥-shaped spot on front of posterior margin; an oblique fascia behind eyes, between which and centre is a small and slightly curved fascia, and lateral margins, narrowly inwardly and broadly outwardly, black. Mesonotum with two large but short obconical fasciæ on anterior margin, which are followed by a smaller one on each side, and a long straight oblique fascia near lateral margins, a ⊥-shaped spot on disk, which has a small round spot near each basal angle, and a small transverse fascia on each side of cruciform basal elevation, black. Posterior margin of metanotum black. Abdomen above with the anterior segmental margins black. Body beneath with the upper and posterior-lateral margins, and central longitudinal fascia to face, lateral pronotal angles, and a transverse fascia in front of intermediate coxæ, black; abdomen testaceous; posterior segmental margins green; discal anterior segmental margins and anal appendage black. Tegmina and wings hyaline. Tegmina with basal two-thirds of venation ochraceous, remainder fuscous. Anastomoses, apices, and a subapical spot to longitudinal veins of apical areas, broadly fuscous; costal membrane greenish, with two fuscous spots near base; claval area fuscous. Wings with the venation somewhat alternately ochraceous and fuscous, more broadly fuscous near inner margin. The body is broad and robust; abdomen gradually narrowing to apex; latitude between outer margin of eyes and width of pronotum at base equal. Lateral pronotal margins broadly produced

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and angulated. Tympana prominent and ovate; opercula wide, reaching centre of first abdominal segment, narrowed and obtusely rounded, but not meeting inwardly. Rostrum just passing posterior coxæ, with the apex pitchy. Face broad, moderately tumid, coarsely transversely striate, and with a deep central longitudinal sulcation. Long. 23 mm. Exp. tegm. 70 mm.

*Hab.* Jamaica.

Allied to *O. dilatata*, Fabr., especially to the variety *suffusa*, Walk., but differs from that species by having the ulna veins very widely separated at base, the costal membrane much broader, tympana broader and not sinuated on upper inner margin, and the shorter and gradually attenuated abdomen.

*Pœcilopsaltria leopardina*, n. s.

♀. Head piceous, front somewhat paler, two spots on lateral margins in front of eyes, and eyes ochraceous. Pronotum ochraceous, with a few scattered spots on disk, and borders of dilated lateral margins, black. Mesonotum castaneous, with four somewhat obconical spots on anterior margin, of which the central two are the smallest, and a large central spot on disk black. Cruciform elevation at base of mesonotum ochraceous. Abdomen piceous, with the apical margins of abdominal segments and apex of anal appendage ochraceous. Body beneath piceous; lateral margins broadly ashy grey; basal joint of rostrum, opercula, apical margins of abdominal segments, and anal appendage, ochraceous. Legs castaneous; posterior tibiæ ochraceous; some irregular spots on coxæ; bases and apices of tibiæ and tarsi piceous. Tegmina with the basal third opaque; remainder pale hyaline; the opaque portion consists of a broad central cretaceous fascia, margined outwardly and inwardly with piceous. A broken central waved fascia across centre of tegmina, widest on costal margin, anastomoses broadly, and a double series of submarginal spots placed on longitudinal veins, piceous. Wings, excepting outer margin, opaque, piceous, with a broad central cretaceous fascia extending about half-way across from anterior margin. Outer margin pale hyaline. Head, including outer margins of eyes, considerably broader than base of mesonotum; lateral

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margins of pronotum widely and acutely dilated; the anterior margins rounded, the posterior more acute; rostrum reaching posterior coxæ; face globose, strongly and transversely striate, and deeply and longitudinally sulcated. Long. 28 mm. Exp. tegm. 83 mm.

*Hab.* East Africa, near Zanzibar.

Allied to *P. quadraticollis*, Butl., from which it at once differs by the semi-opaque tegmina and wings. The tegmina and wings in pattern have considerable affinity to *P. subrufa*, Walk., an Indian species.

*Platypleura inquinata*, n. s.

♀. Body castaneous; mesonotum dark castaneous. Head with the frontal margin, a spot above insertion of antennæ, area of ocelli, a transverse fascia on inner side of anterior margin of eyes, and two small longitudinal fasciæ at base between ocelli and eyes, black. Pronotum with two transverse fasciæ, commencing behind eyes and carried obliquely to disk, where they are thickened, but do not meet; between these and inner sides of lateral margins two other straight oblique fasciæ, inner border of dilated lateral margins, and a somewhat indistinct central quadrate spot on inner side of posterior margin, black. Mesonotum with two obscure obconical spots at base, and some other indistinct markings, black. Anterior dorsal segmental margins fuscous; anal appendage above black. Anterior margin of face, a spot on coxæ and trochanters, apices of femora, tibiæ (excepting base), tarsi, and apex of rostrum, fuscous. Tegmina creamy, opaque, irregularly spotted and shaded with fuscous, with irregular hyaline spots, of which the following are the most conspicuous: one near the end of radial area, two occupying the centres of the two upper ulnar areas, one a little before centre of third ulnar area, a smaller one near apex of fourth ulnar area, an irregular elongate series (mostly confluent) on apical areas, which are largest on the sixth area, and absent on the seventh, and a large elongate spot on outer margin at end of clavus; veins castaneous; costal membrane and area fuscous. Wings ochraceous; apical third castaneous, basal third much suffused with castaneous, anal margin pale fuscous, outer margin creamy, hyaline near anal margin, and castaneous at

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centre. Face globose, transversely and coarsely striate, with a deep central longitudinal sulcation. Head, including eyes, equal in width to base of mesonotum. Lateral margins of pronotum much ampliated, and subacutely angulated; posterior margins transversely striated. Rostrum almost reaching apical margin of third abdominal segment. Body more or less clothed with pale pilosity. Long. 28 mm. Exp. tegm. 81 mm.

*Hab.* E. Africa, Nyassa (*Cotterell*).

This species belongs to the *limbata* group of the genus.

*Platypleura ærea*, n. s.

♀. Body ochraceous and sparingly pilose. Head with the ocellar area, on each side of this a small curved fascia pointing towards eyes and inner frontal margin, black. Pronotum with a central longitudinal fascia, bordered on each side with an oblique fascia in shape of the letter W, black. Mesonotum with four obconical basal spots, of which the central two are the largest; on each side of these a straight oblique fascia, a small central longitudinal fascia on disk, and a large lunate spot near centre of posterior margin, black. Abdomen above with basal margins of segments and anal appendage black. Central sulcation of face, a transverse spot at insertion of antennæ, apex of rostrum, and apices of tarsi, pitchy. Tegmina pale hyaline; basal third ochraceous, opaque, and pilose, with the following fuscous markings: two spots on costal membrane, one at base, three in radial area, a spot occupying the base of each of the three upper ulnar areas, a large elongate spot near middle of fourth, and a narrow linear one reaching apex of fifth ulnar area, a basal claval streak, anastomoses, and a submarginal series of smaller spots, placed in pairs on the veins, the inner being the largest. Besides these, on the hyaline portion, are a number of irregular, somewhat indistinct, pale fuscous spots. Wings pale hyaline; nervures ochraceous; basal half fuscous; outer margin of this fuscous area sublunate. Face globose, with a longitudinal sulcation, and strongly and transversely striate. Head, including eyes, about equal in width to base of mesonotum. Lateral margins of pronotum ampliated, and subacutely angu-

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lated. Rostrum just passing posterior coxæ. Long. 22 to 25 mm. Exp. tegm. 69 to 74 mm.

*Hab.* W. Africa, Calabar.

This species is allied to *P. strumosa*, Fabr., from which it is easily separated by the basal half of the wings being fuscous. The markings of the pronotum and tegmina are also distinct, but I am unable to compare the opercula, as the four specimens which I possess are all females.

*Leptopsaltria pryeri*, n. s.

♂. Body above pale testaceous; head with the frontal margin pitchy; the area of the ocelli black; the posterior margin also narrowly black. Pronotum with a central longitudinal sulcation, the edges of which are raised, commencing on anterior margin, but not extending through more than half the pronotal length, on each side of which are two oblique and very distinct striæ; lateral and posterior margins ochraceous. Mesonotum with two obconical spots on anterior margin, the edges of which are black. Abdomen with a distinct transverse sulcation at the segmental sutures. Body beneath unicolorous; opercula pale inwardly, narrowly bordered with black; four large dark castaneous tubercles placed in pairs near posterior margins of second and third abdominal segments. Tegmina and wings very pale transparent ochraceous; tegmina with the transverse veins at the bases of second, third, and fifth apical areas infuscated, and a submarginal series of pale fuscous spots situated near the apices of the longitudinal veins; basal area pale ochraceous; claval area pale testaceous; wings pale testaceous at base. The face is large and tumid, with a somewhat faint longitudinal sulcation, but strongly transversely striated; rostrum with the apex pitchy, and passing posterior coxæ; opercula situated somewhat widely apart, the posterior margins oblique, with the lateral angles rounded, and reaching about centre of second abdominal segment; anterior femora with two large and prominent spines. Long. 26 mm. Exp. tegm. 82 mm.

*Hab.* North Borneo (*Pryer*).

This species is allied to *L. guttularis*, Walk., of which the type is a female, but Stål describes the male,



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compared with *L. tuberosa*, Sign., as having the opercula "minus longe producta." In specimens of *L. tuberosa*, in my own collection, the opercula are short, reaching the base of the second abdominal segment, whilst in *L. pryeri* they are much more elongated, and attain in length to the middle of that segment.

*Dundubia radha*, n. s.

♂. Body above pale castaneous. Head with the area of the ocelli black. Pronotum with the lateral and posterior margins, and a very narrow anterior margin, ochraceous; the last is inwardly margined with two small transverse linear black spots, and the posterior margin has also a very narrow discal inner border of the same colour. Mesonotum with a large central obconical spot on anterior margin, with a very indistinct central line, and with the lateral borders black, outwardly margined with ochraceous; five indistinct black basal spots, three within the anterior angle of the cruciform elevation, and one on each side of the same. Abdomen rather darker in colour, with the segmental sutures pitchy. Under side of the body concolorous; opercula dull ochraceous. Tegmina and wings pale hyaline; tegmina with the costal membrane and claval area dull ochraceous; wings with the base narrowly of the same colour. The body is very elongated; the head, including eyes, a little narrower than base of pronotum; the face is prominently convex, faintly longitudinally sulcated, and transversely striated; the rostrum reaches the middle of the posterior coxæ; the opercula are very long, reaching the penultimate abdominal segment; they are suddenly narrowed on first abdominal segment, and then gradually widened and rounded on each side, the maximum width being at junction of second and third abdominal segments, from whence they are gradually narrowed to apex, which is obtusely rounded. Long. 53 mm. Exp. tegm. 124 mm.

*Hab.* Madras Presidency; Masuri Hills.

This species is allied to *D. mannifera*, from which it differs by the much broader head, attenuated apices of the opercula, and its much larger size. In superficial appearance it bears a strong affinity to the genus *Cosmopsaltria*.

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*Dundubia tripurasura*, n. s.

♂. Head, pronotum and mesonotum ochraceous. Head: front with a triangular black spot near base, and transverse black striæ which do not meet in the centre; vertex with two large oblique and irregular black fasciæ on disk, and a large irregular black spot on inner margin of eyes. Pronotum with two central longitudinal black fasciæ, and three oblique black striæ on each side, the outer one submarginal and somewhat rounded. Mesonotum with a large central clavate spot, of which the apex terminates on anterior margin, bordered on each side by a subconical spot, followed by a small triangular one, and a wide submarginal fascia, black. Abdomen dull sanguineous, with a series of discal segmental black fasciæ (these are much larger in some specimens and subconfluent), and a lateral segmental row of irregular black spots. Body beneath with the sternum ochraceous, covered with greyish pubescence. Abdomen dull sanguineous; opercula pale sanguineous; legs ochraceous. Tegmina and wings pale hyaline. Front very prominent and convex; head, including eyes, narrower than base of pronotum, subequal to mesonotum in width. Opercula subtriangular, well separated at base, gradually becoming more divergent, and narrowing to apex, which is obtuse, and almost reaches apex of fourth abdominal segment. Anterior femora armed with three spines; two moderately large and ochraceous; apical one small and black. Posterior tibiæ with three black spines on inner side near apex, and two smaller and wider apart on margin. Long. 33 mm. Exp. tegm. 85 mm.

*Hab.* Assam.

This species is allied to *D. vibrans*, Walk., from which it structurally differs by the long and subtriangular opercula. The abdomen is also broader, the tegmina unspotted, and the sanguineous colour of the abdomen and opercula are also somewhat peculiar and distinct.

*Dundubia nagarasingna*, n. s.

♂. Body above castaneous. Head with centre of front and an oblique fascia on each side of ocelli

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ochraceous. Pronotum with a central fascia and lateral and posterior margins ochraceous. Mesonotum with two anterior central obconical spots denoted by black margins; margins of basal cruciform elevation ochraceous. Abdomen with the basal half sparingly clothed with greyish pile, the apical half much more densely so, and with a broad lateral fascia of greyish pile on each side. Body beneath, with the sternum, legs and opercula, pale ochraceous; abdomen pale castaneous. Tegmina and wings pale hyaline; costal membrane of tegmina ochraceous. Head broad, including eyes subequal in width to base of pronotum, and wider than mesonotum; the face is very tumid, the centre longitudinally sulcated for half the length, and sides transversely striated; rostrum reaching apex of posterior coxæ; opercula long, reaching base of last abdominal segment, narrowest and with the edges concave from base to commencement of second abdominal segment, from which they are somewhat suddenly widened with the edges convex; apex somewhat narrower and rounded. Anterior femora with two long ochraceous spines; posterior tibiæ with two long black spines, somewhat close together on inner margin near apex, and two much wider apart on outer margin. Long. 34 mm. Exp. tegm. 95 mm.

*Hab.* N.W. Burmah.

I am somewhat at a loss for a closely-allied species with which to compare *D. nagarasingna*, but its distinct colour and markings, and shape and length of the opercula, should sufficiently distinguish it.

*Cosmopsaltria sita*, n. s.

♂. Head: front with a central fascia furcate anteriorly, and an oblique spot on each side at the base; vertex with a large triangular spot enclosing ocelli, and an irregular longitudinal fascia near inner margin of eyes, black. Pronotum with two central longitudinal fasciæ joined and rounded near posterior margin, widened and angulated near anterior margin; on each side of these is a small discal waved line, and two oblique fasciæ near lateral margins (the outer one submarginal and rounded), black. Mesonotum with a central longitudinal fascia; on each side of this a clavate, smaller and suboblique fascia, followed by two linear

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spots on anterior margin, and a discal waved irregular fascia on each side. Abdomen with the segments (excluding first) more or less piceous at base, and with a lateral segmental row of piceous spots. Body beneath ochraceous and unicolorous. Tegmina and wings pale hyaline; tegmina with the venation of basal half ochraceous, and apical half fuscous; transverse veins at base of second and third apical areas broadly infuscated; transverse veins at base of first and second ulnar areas fuscous, ochraceous at junction. The head, including eyes, is considerably narrower than base of pronotum; the face is only moderately convex, sulcated from beyond the middle, the sides distinctly striated (the face has also an oblong spot bordered with black at base, and the upper striations are also of that colour). The opercula reach the third abdominal segment; they are moderately truncate outwardly, widened and angulated inwardly (but not meeting) on first abdominal segment, and then diverging and narrowing to apex, which is obtuse and rounded; the inner margin is slightly convex. Rostrum reaching a little beyond posterior coxæ. Anterior femora with two strong spines. Long. 24 mm. Exp. tegm. 73 mm.

*Hab.* S. India or Bombay?

This and the two following species are somewhat difficult to separate from the genus *Dundubia*, save and except by the length of the rostrum. They also resemble the *Vibrans* group of that genus.

*Cosmopsaltria durga*, n. s.

♂. Head, pronotum and mesonotum dull ochraceous. Head with the following black markings: an irregular spot on front; a large central fascia on vertex, reaching from anterior to posterior margins, produced on each side in front, and enclosing ocelli; a curved fascia a little before inner margin of eyes, and a subtriangular spot on apex of lateral margin. Pronotum with the anterior margin (narrow), a central longitudinal fascia, bordered with black on each side, and a biangulated fascia on each lateral margin, pale ochraceous; two narrow oblique fasciæ on each side, a narrow longitudinal fascia on each side of disk, inner posterior, and inner and outer lateral margins, black. Mesonotum with a clavate central longitudinal

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fascia, bounded on each side by a shorter, broader, and much angulated one, followed by an elongated spot, and by a sublateral broad fascia, broken near anterior margin, two rounded spots near base, and two smaller ones on anterior branches of cruciform elevation at base. Abdomen pale castaneous, disk piceous, gradually widening from base to apex, where it is wholly black. Under side of body ochraceous and unspotted; a black spot on inner margin of eyes, anterior tibiæ and tarsi, apices of intermediate tibiæ and tarsi, and apex of rostrum, piceous. Opercula pale greenish. Tegmina and wings pale hyaline, transverse veins at bases of second and third apical areas, infuscated. Face broadly sulcated in centre, and transversely striated (many of the striæ black); rostrum passing posterior coxæ, and reaching inner angles of opercula. Opercula reaching second abdominal segment, the outer margins subparallel with lateral abdominal margins, hipped and widest (but not meeting) near bases of femora, from thence diverging and gradually narrowing to apex, which is obtusely angulated. Anterior femora with two long and prominent teeth, and a shorter one near apex. Posterior tibiæ with three inner and two outer long marginal spines. Abdomen broad, apex obtuse. Long. 33 mm. Exp. tegm. 98 mm.

*Hab.* Assam.

This species, in size and markings (excluding the spotted tegmina), much resembles *Dundubia tripurasura*, Dist. The less produced frontal portion of the head and the length of the rostrum, however, have forced me to place it in the genus *Cosmopsaltria*.

*Cosmopsaltria mongolica*, n. s.

♂. Body above ochraceous; head with the black markings as in *C. durga;* pronotum with two central longitudinal fasciæ placed close together, narrowed, rounded, and meeting on posterior margin, more separated and widened on anterior margin, on each side of these a curved fascia followed by two oblique ones. Mesonotum marked and spotted as in *C. durga*. Abdomen with a series of transverse, irregular, discal, dull, castaneous fasciæ, becoming confluent, and occupying the whole of apex, and a lateral segmental series of irregular-shaped spots of the same colour. Body beneath pale

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ochraceous, a large spot on inner margin of eyes, apical margins of face and apex of rostrum, piceous. Tegmina and wings pale hyaline. Face not prominently convex, with the disk sulcated and the margins strongly striated. Rostrum passing posterior coxæ, about reaching inner angles of opercula; opercula reaching third abdominal segment, with the outer margins parallel with lateral margins of abdomen for half their length, then becoming convex, and again narrowed to apex, widened inwardly, but not meeting at apex of first abdominal segment, and then narrowed and divergent to apex, which is broad and rounded. Posterior tibiæ with two long spines on inner and outer margins. Long. 31 mm. Exp. tegm. 82 mm.

*Hab.* North China.

Closed allied to *C. durga*, Dist., but smaller, the tegmina unspotted, the face much less convex, the opercula longer, with their apices broadened and rounded. The abdomen narrowed towards apex, and the number of spines to posterior tibiæ different.

*Cosmopsaltria abdulla*, n. s.

♂. Body above castaneous, more or less covered with greyish pubescence and pilosity. Head with the vertex somewhat sparingly pilose, and the area of the ocelli a little infuscated. Pronotum sparingly pubescent, with a central X-shaped space denoted by striæ, followed by two oblique striæ, the outer one submarginal and slightly curved, lateral and posterior margins densely pubescent. Mesonotum with two faintly indicated obovate spots on anterior margin, sparingly pubescent, the lateral margins and region of the cruciform basal elevation much more densely pubescent. Abdomen sparingly pubescent, but much more densely so on disk and lateral margins. Under side of body ochraceous; anterior and intermediate femora with the bases and apices fuscous, the central portion pale ochraceous. Anterior tibiæ castaneous, and tarsi pitchy; intermediate tibiæ pale castaneous, with the base narrowly and the apex broadly piceous. Posterior legs pale castaneous. Apices of femora, bases and apices of tibiæ dark castaneous. Tegmina and wings pale hyaline; tegmina with the costal membrane and basal area castaneous, claval area pitchy, transverse veins at bases of

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second, third, and fifth apical areas infuscated, and a submarginal series of small fuscous spots at apices of longitudinal veins; wings with anterior claval margin and a curved basal streak, dark castaneous. The face is very swollen and convex beneath, longitudinally sulcated and transversely striated; the rostrum just extends beyond base of femora; the opercula reach the base of the fourth abdominal segment; the outer margins are deeply narrowed and concave near base; they then become slightly convex and directed upwards along the lateral abdominal margins; the inner margins are also narrowed near base, and then become slightly convex to apex, which is broad and rounded; these opercula are very wide apart at base, and are confined to the lateral side of the under surface of the abdomen. Long. 46 mm. Exp. tegm. 116 to 122 mm.

*Hab.* Singapore; Penang.

This is a large and distinct species of *Cosmopsaltria*, which I have placed near *C. doryca*, Boisd., from which it differs by its larger size, more spotted tegmina, and different size and structure of the opercula, &c.

Note.—Of four specimens in my collection only one (here described) possesses the greyish pubescence above, which evidently is easily obliterated or worn away.

*Cosmopsaltria oopaga*, n. s.

Head dull ochraceous. Posterior lateral margins of front black; two basal ocelli surrounded with black, which extends to posterior margin. Pro- and mesonotums pale olivaceous; the first with a central longitudinal ochraceous fascia, bordered with black, which is widest anteriorly, and rounded with the black lines continuous posteriorly. Mesonotum with two obconical spots, bordered with black on anterior margin, followed by a small black spot and an anterior lateral fascia; a curved basal fascia and a small spot on each frontal side of cruciform elevation of the same colour. Abdomen dull ochraceous, inclining to olivaceous, with the lateral side sparingly covered with greyish pubescence, and with an indistinct lateral segmental row of fuscous spots. Underside of body pale ochraceous or olivaceous. Tegmina and wings pale hyaline. The body is broad and somewhat depressed, the abdomen narrowing at apex.

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The head, including eyes, is narrower than base of pronotum, and but little wider than mesonotum. The rostrum about reaches the apex of the first abdominal segment. The opercula, which almost reach the apex of the fourth abdominal segment, are situated on lateral side of abdomen, much wider apart at base than at apex. They are concavely narrowed on each side near base, and are then widened and convex on each side to apex, which is broad and rounded, the extreme apex being on outer margin. The face is swollen, with a curved black fascia at base, and a central longitudinal sulcation; it is profoundly transversely striated, the interstices being very broad. Long. 39 mm. Exp. tegm. 96 mm.

*Hab.* Burmah.

This species is allied to *C. doryca*, Boisd., but the body is much broader, the tegmina unspotted, and the shape of the opercula more like those of *C. abdulla*, Dist.

*Cosmopsaltria operculissima*, n. s.

♂. Body above castaneous. Head with lateral margins of front, lateral margins of vertex, area of ocelli, and an irregular spot between ocelli and eyes, black. Pronotum with two central, longitudinal, slightly curved black, fasciæ, concave externally, a small curved fascia on each side of disk, and the oblique striæ also black. Mesonotum very dark castaneous, with two obconical spots on anterior margin, denoted by black margins, and with some very indistinct darker shadings on lateral sides of disk. Cruciform elevation at base pale castaneous. Abdomen somewhat darker on disk and near lateral margins. Body beneath much paler, and clothed with ochraceous pubescence; face castaneous, with the centre black; opercula ochraceous, with a broad subapical fuscous band, both above and below. Tegmina and wings pale hyaline; veins, costal membrane, basal area, and claval margin of tegmina, castaneous. Abdomen very short, less than length from front of head to base of mesonotum; head broad, including eyes, equal to width of pronotum at base; opercula very large, about reaching apex of abdomen, and abutting on each side of apical lateral margins; they are narrow, and situated wide apart at base, narrowed and concave on each side about basal abdominal segment, and then broadly widened and convex on each



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side, particularly so inwardly, where they considerably overlap on disk of abdomen. Apices broad, and somewhat angularly rounded. Face with a broad central sulcation, and the sides strongly and transversely striated. Rostrum about reaching posterior coxæ. Long. 24 mill. Exp. tegm. 78 mill.

*Hab.* North Borneo (*Pryer*).

The great size of the opercula, compared with the abdomen, distinguishes this species from others of the genus, and, as far as my experience extends, renders it unique in that respect.

*Pomponia bindusara*, n. s.

♂. Body above pale ochraceous; head with lateral margins of front bordered with black striæ, and with two contiguous black spots on disk; two oblique striæ on lateral margins of vertex and area of ocelli black. Pronotum with two central longitudinal fasciæ, narrowed, joined, and rounded on posterior margin, widely divergent and terminating on anterior margin, a small curved fascia on each side of disk, and oblique striæ also black. Mesonotum with a central fascia, a shorter and more oblique one on each side, followed by an elongate spot on anterior margin, and a long, somewhat broken, submarginal fascia, black; two rounded spots in front of cruciform elevation, and two smaller ones on anterior branches of the same also black. Abdomen somewhat thickly covered with pale pubescence, with a series of discal segmental markings, two large spots near lateral margins of third and fourth segments, and a lateral segmental row of small spots, black, Underside of body pale ochraceous. Apical disk of abdomen black. Tegmina and wings pale hyaline; transverse veins, at bases of second and third apical areas, slightly infuscated. Face convex. Apical two-thirds with a narrow central sulcation, transversely striated, the striæ black near centre. Rostrum slightly passing posterior coxæ, its apex black. Opercula small; posterior margins obtusely angulated, and reaching base of first abdominal segment, widened and obtusely angulated, but not meeting inwardly. Posterior tibiæ with three inner and two outer marginal spines. Anterior femora with two long and prominent spines. Long. 30 mm. Exp. tegm. 87 mm.

*Hab.* Tenasserim.

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This species, on its upper surface, bears a great resemblance to *Dundubia vibrans*, Walk., and to *Cosmopsaltria sita*, Dist. Many of these Indian species, belonging to the genera *Dundubia*, *Cosmopsaltria*, and *Pomponia*, have a common facies in colour and markings, which is probably due to mimetic resemblance.

*Pomponia kama*, n. s.

♀. Head, pronotum and mesonotum greenish. Head with the lateral sides of the front black; vertex with two transverse lines on lateral margins, somewhat connected inwardly by a short oblique fascia and area of ocelli, from which proceed two narrow fasciæ to posterior margin, black. Pronotum with a central black clavate fascia, of which the centre is ochraceous, widest and much angulated at anterior margin, narrowest and somewhat acutely pointed on posterior margin; an arcuated narrow fascia on each side of disk; oblique striæ pale fuscous; lateral submarginal striæ black, and an oblique fuscous spot on lateral margins; posterior margin narrowly edged with black. Mesonotum with two large obconical spots margined with black, and a large Λ fascia in front of anterior angles of basal cruciform elevation. Tympana pale greenish, fuscous anteriorly, and bright cretaceous-white near lateral margins. Abdomen castaneous; lateral margins of basal segment bright cretaceous-white. Body beneath with the head, sternum, and opercula greenish; abdomen castaneous. Legs greenish; apices of tibiæ and tarsi and tarsal claws black. Tegmina pale fuscous hyaline; anastomoses and apices of lateral veins at margin broadly infuscated, and a blackish spot near termination of radial vein. Wings pale hyaline. Face broad and convex, the centre blackish, and with a central longitudinal impression, and transverse striations. Rostrum with the apex black, and just passing posterior coxæ. Opercula very short, not reaching base of first abdominal segment. Abdomen beneath deeply sulcated at lateral margins; the disk somewhat gibbous. Head, including eyes, narrower than base of pronotum, about equal to base of mesonotum. Long. 18 mm. Exp. tegm. 66 mm.

*Hab.* North India, Darjeeling.

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Allied to *P. transversa*, Walk., but much smaller, abdomen narrower and more linear, head broader in comparison with pronotum, and colour different, &c.

*Pomponia madhava*, n. s.

♂. Body pale greenish; abdomen with a lateral row of three large oblong spots, only denoted by their darker green margins, occupying the lateral sides of the first three segments; segmental incisures narrowly dark greenish. Ocelli red; eyes fuscous. Mesonotum with two very faint obconical spots. Body beneath pale greenish; legs and rostrum pale ochraceous. Tegmina and wings pale hyaline; the first with the costal membrane and veins pale greenish. The head, including eyes, is narrower than the base of pronotum; the face is broad and convex, with a broad central longitudinal impression and strong transverse striations; the opercula are small, not reaching apex of metasternum; the second and third abdominal segments beneath are rounded, produced, and pointed anteriorly; the rostrum reaches posterior coxæ. Long. 22 mm. Exp. tegm. 55 mm.

*Hab.* Assam.

Allied to *P. tigroides*, Walk., from which it differs by its being pale greenish and unicolorous, the tegmina broader, with the costal margin irregularly curved and not deflexed at termination of radial vein, and also in having both the second and third abdominal segments beneath rounded, produced, and pointed anteriorly.

*Psaltoda aurora*, n. s.

♂. Head black; vertex with a spot at anterior lateral margins; two transverse spots on each side of disk, near anterior and posterior margins; ocelli and eyes ochraceous. Pronotum dull, obscure ochraceous, with two central longitudinal black fasciæ, more separated, and widest apart at anterior margin, much closer together near posterior margin, where they are joined to a broad basal central fascia of the same colour; an obscure arcuated fascia on each side of disk, and oblique striæ also black. Posterior and lateral margins bright ochraceous, narrowly edged with black. Mesonotum dark, obscure ochraceous, with two central

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obconical spots, on each side of which is a much longer and more angulated spot, and a large broad spot, elongated and narrowly pointed anteriorly, situated in front of cruciform elevation, black; cruciform basal elevation bright ochraceous, with the anterior branches black. Scutellum black. Abdomen orange-yellow; first abdominal segment with centre of basal margin and lateral sides of apical margin black. Body beneath bright ochraceous; face, anterior margins of head, inner margins of eyes, anterior and intermediate tibiæ and tarsi and base of metasternum, black. Femora ochraceous, streaked with black. Rostrum pitchy, ochraceous towards base. Tegmina pale hyaline; veins fuscous, ochraceous towards base; costal membrane bright ochraceous; transverse veins at bases of second and third apical areas infuscated. Wings pale hyaline; veins fuscous and ochraceous. The face is long, broad, and very convex, with a narrow central sulcation and strong transverse striations; the rostrum reaches posterior coxæ. The opercula are broad, produced, angulated, and slightly overlapping interiorly, subtruncate outwardly, rounded posteriorly, and not reaching anterior margins of tympana. Long. 48 mm. Exp. tegm. 120 mm.

*Hab.* Australia, Rockhampton. (Coll. Dist. Mus. Goddefroy).

This species differs from *P. mœrens*, Germ., not only by its large size and brighter and different coloration, but also by the broader and more convex face, somewhat shorter rostrum, longer and not apically compressed abdomen, &c. It is also allied to *P. argentata*, Germ., a species which, from the description of Germar, and specimens thus labelled in the British Museum (these were seen under this name by Stål, when he critically examined the collection), appears to be very closely allied to *P. mœrens*.

*Cicada kuruduadua*, n. s.

♂. Head, pronotum and mesonotum pale ochraceous, tinged with green. Head: front green, with two central black spots; vertex ochraceous, with a broad, basal, transverse, black fascia. Pronotum with a central fascia, an irregular transverse basal patch on disk, and lateral and posterior margins, greenish; oblique striæ fuscous,

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forming two distinct fuscous spots on each side of central fascia. Mesonotum with two central fasciæ, narrow at commencement on anterior margin, and thickened and curved inwards at termination on disk, followed by two contiguous spots, a sublateral fascia much curved inwardly at apex, and two rounded spots in front of basal cruciform elevation, black. Cruciform elevation and abdomen castaneous, the last sparingly pilose. Body beneath ochraceous; face green, irregularly bordered with black on each side; coxæ and legs tinged with greenish; lateral margins of sternum and opercula broadly cretaceous-white. Tegmina and wings pale hyaline; tegmina with the costal membrane and basal portion of venation green; wings with the base very narrowly pale ochraceous. Face not centrally sulcated; sides transversely striated. Rostrum passing the intermediate coxæ. Opercula about reaching the base of second abdominal segment, outwardly truncate, posteriorly somewhat angularly rounded, slightly overlapping along inner margins. Anterior femora armed with two strong spines. Long. 33 mm. Exp. tegm. 100 mm.

*Hab.* Fiji Islands. Mus. Goddefroy, Coll. Dist.

This is a very beautifully marked and distinct species of the genus. I am unacquainted at present with any near ally. I possess a female specimen (possibly discoloured), in which the head and pronotum are very dark and dull ochraceous, the mesonotum castaneous, and the abdomen blackish. The usual green markings of the tegmina are also castaneous in this specimen.

*Tibicen aurengzebe*, n. s.

♂. Body above dull dark ochraceous. Head with the front margined anteriorly by two narrow black striæ; ocelli narrowly margined with black; eyes pale ochraceous. Pronotum with a central longitudinal sulcation, bordered with a small fuscous spot on each side, at anterior margin, starting from a wide, transverse, and somewhat raised base, on the centre of which is a fuscous spot; oblique striæ narrowly fuscous; lateral anterior and posterior margins much paler. Mesonotum with two short obconical central fuscous spots, and a large sublateral and somewhat broken fascia of the same

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colour on each side. Abdomen with the posterior segmental margins narrowly and obscurely paler. Body beneath concolorous; centre of face, metasternum, disk, and apex of abdomen, fuscous. Legs concolorous; femora streaked with fuscous; bases and apices of tibiæ, and apical joints of tarsi, also fuscous. Tegmina and wings pale hyaline and talc-like; tegmina with costal and basal half of venation ochraceous, remainder fuscous; transverse veins at bases of second and third apical areas infuscated. Width of head, between outer margins of eyes, rather less than that of pronotum at base; pronotum a little more than twice as broad as long; face with the base much elevated, somewhat narrowing to apex, distinctly longitudinally sulcated, and strongly transversely striate. Rostrum about reaching posterior coxæ, with the apex pitchy; opercula slender, curved inwardly, but not meeting at base or apex. Long. 18 mm. Exp. tegm. 48 mm.

*Hab.* Bombay Presidency.

*Carineta oberthüri*, n. s.

♂. Head, pronotum and mesonotum greenish; abdomen dull reddish. Head with the front margined anteriorly with several dark transverse striæ, their edges raised; vertex somewhat reddish in front of eyes; the ocelli very pale luteous; the eyes greenish. Pronotum with a central green longitudinal fascia, not reaching anterior or posterior margins, widened and truncated anteriorly, rounded posteriorly; a curved fascia on each lateral margin, and two rounded spots near centre of base, black. Mesonotum with two faint contiguous central spots, on each side of which is a large but very obscure fascia; basal cruciform elevation and frenum reddish. Body beneath with the sternum greenish, and the abdomen reddish; coxæ and femora greenish; tibiæ and tarsi reddish. Tegmina and wings pale hyaline; tegmina with the venation and costal membrane and area greenish; the anterior edge of costal membrane and claval margin fuscous. The width of the head between the eyes is equal to the length of the head and pronotum taken together, but much narrower than pronotum at base, where it is more than twice broader than long. The face is very convex, and much produced at base, with a wide, central longitudinal sulcation, and strong

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transverse striations. The rostrum just passes the intermediate coxæ. The opercula have the apices narrowed and much curved inwardly, but not meeting. Long. 28 mm. Exp. tegm. 75 mm.

*Hab.* Amazons, Ega (*M. de Mathan*). Colls. Oberthur and Distant.

This species, in general size and venation of tegmina, is allied to *C. socia*, Uhler, from which it differs by the long produced head, very different colour and markings, &c.

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# PROCEEDINGS

OF THE

# ENTOMOLOGICAL SOCIETY OF LONDON

## FOR THE YEAR 1881.

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February 2, 1881.

H. T. STAINTON, Esq., F.R.S., &c., President, in the chair.

Donations to the Library were announced, and thanks voted to the respective donors.

The President made some prefatory remarks, thanking the Society for electing him to that office. He nominated Sir John Lubbock, Bart., Mr. R. Meldola, and Mr. W. L. Distant as Vice-Presidents for the ensuing year.

*Election of Members.*

Mr. Alfred Lloyd, F.C.S. (Dome House, Upper Bognor), and Mr. Theodore Wood (5, Selwyn Terrace, Jasper Road, Upper Norwood), were balloted for and elected Ordinary Members of the Society.

*Exhibitions, &c.*

Mr. O. Salvin exhibited two large boxes of Insects of all Orders, collected on the Altos and Pacific coast of Guatemala by Mr. Champion. These had but just arrived, and had not yet been critically examined.

Mr. W. A. Forbes exhibited a curious filamentous growth upon a leaf from New Britain, due to the presence of one of the *Coccidæ*; also the larva of one of the *Blattidæ* from Pernambuco, North Brazil, which was remarkable for its superficial resemblance to an Isopod crustacean. These larvæ were common under the bark of trees in damp woods.

Mr. R. M'Lachlan exhibited two examples of the fungoid parasites of insects. Firstly, a *Sphæria* (*Cordyceps*) attacking a larva from South America,



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said to be the destructive cotton worm. The larvæ exhibited were certainly coleopterous, and Mr. M'Lachlan considered it probable they belonged to the genus *Dynastes*. Secondly, a moth, one of the *Noctuæ*, from South Wales, attacked by a species of *Isaria*.

Mr. C. O. Waterhouse was inclined to refer the South American larva to the genus *Passalus*, from an examination of the form of the head.

Mr. M'Lachlan also exhibited three males and one female of *Thore concinna*, a beautiful dragon-fly from Ecuador described in his paper read this evening.

Mr. T. R. Billups exhibited two specimens of *Pezomachus distinctus*, a species new to the British fauna, from Mickleham; also a new species of *Stibeutes*, captured at Deal last August.

Mr. F. P. Pascoe exhibited a specimen of *Peripatus Novæ-Zelandiæ* in spirits, and remarked that Sir J. Lubbock, in his recent Address, quoted a German author who asserted that the tracheæ discovered by Moseley were merely modifications of the subcutaneous glands, thus again removing this curious creature from the *Arthropoda* back to the worms (*Vermes*). This was, however, contrary to the opinion of Huxley, Schmarda and other writers. It was stated that *Peripatus* was unsegmented, but Schmarda gives "13 to 36" segments in characterizing the group. Through the kindness of Prof. Jeffrey Bell, he (Mr. Pascoe) had examined the species in the British Museum, and found that *P. Edwardsii* was the only one with any traces of segmentation. It is probable that Schmarda intended that each pair of legs indicated a segment.

Mr. W. L. Distant exhibited a very large *Cicada* received from Madagascar, belonging to the genus *Platypleura*, but at present undescribed.* This insect was interesting in two respects:—first, from its large size, surpassing any species of this widely distributed genus in the Ethiopian and Oriental regions, excepting perhaps large specimens of the W. African *P. limbata*; secondly, as being the type of two or three species of the genus in Madagascar, peculiar and similar in their common facies, but so very alike in colour and markings as to defy separation, were it not for the remarkable and strong divergence of structural characters to be found in the structure and size of the drum-flaps beneath.

In reply to the President, as to whether any information was procured as to the amount of sound produced by the musical apparatus of this large *Cicada*, Mr. Distant stated that unfortunately he had no opportunity of learning anything of its habits; but that he might perhaps be permitted to state, whilst on the subject, that though undoubtedly the possession of the sound-giving apparatus was confined to the males, and was thus due to sexual causes and used for sexual purposes, it might still possibly serve

* *Platypleura gigas*, Distant, Trans. Ent. Soc., 1881, p. 107.

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some protective function as well. Whilst in Malacca Mr. Distant stated that he had several opportunities of capturing the gigantic *Dundubia imperatoria*, which on those occasions not only drummed loudly, but the vibration caused thereby was sufficient to cause a slight thrill throughout the length of the arm. Birds or other enemies of this *Cicada* would probably reject so startling a capture, and in time it might be recognised by its appearance, and receive the immunity possessed by so many gaily-coloured caterpillars.

Mr. W. F. Kirby announced the death of Herr Gabriel Koch, sen., of Frankfurt, on January 22nd, 1881, in the seventy-fourth year of his age. He was best known for his work on the geographical distribution of Lepidoptera.

Mr. R. Meldola read a communication from M. André with reference to some criticisms, made at the October meeting of the Society, on the author's method of publishing the descriptions of new genera and species on the wrapper or on loose sheets of his work now publishing on the Hymenoptera of Europe.

The Secretary read a letter from Mr. George Giles, of Brixton, enclosing a newspaper cutting from an Australian paper detailing the death of a child, in consequence, as was supposed, of the bite of a small spider.

*Papers read.*

Mr. Arthur G. Butler communicated a paper entitled "Descriptions of new Genera and Species of Heterocerous Lepidoptera from Japan."

Mr. R. M'Lachlan read some "Notes on *Odonata* of the Subfamilies *Corduliina*, *Calopterygina*, and *Agrionina* (Legion *Pseudostigma*), collected by Mr. Buckley in the district of the Rio Bobonaza in Ecuador."

Mr. W. F. Kirby read "A List of the Hymenoptera of New Zealand," in which eighty-one species were enumerated, including five described as new.

Mr. Joseph S. Baly communicated a paper entitled "Descriptions of new species of *Galerucidæ*."

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March 2, 1881.

H. T. Stainton, Esq., F.R.S., &c., President, in the chair.

Donations to the Library were announced, and thanks voted to the respective donors.

*Election of a Member.*

Mr. H. Bedford Pim (Leaside, Kingswood Road, Upper Norwood, S.E.), was balloted for and elected an Ordinary Member of the Society.

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*Exhibitions, &c.*

Mr. E. A. Fitch, on behalf of Mr. A. S. Olliff who was present as a visitor, exhibited a specimen of *Strangalia quadrifasciata*. This Longicorn was captured at West Wickham last August while flying round thistle-heads in the sunshine.

Mr. W. C. Boyd exhibited a specimen of *Nonagria lutosa* captured outside the Great Eastern Railway terminus in Liverpool Street; also a curious variety of *Ennomos tiliaria*, taken at light at Cheshunt.

Mr. W. F. Kirby called the attention of Members to a work on all Orders of Insects by Herr Buchecker, of Munich, which was now in course of publication, and exhibited some parts representing the Neuroptera and Lepidoptera. Mr. M'Lachlan said he could by no means recommend this work to the notice of the members, as in his opinion the author was much more of a photographer than an entomologist, consequently little new information was to be obtained, but much that was erroneous and misleading; the photographic plates were fairly good and accurate.

*Papers read, &c.*

Mr. F. P. Pascoe read a paper "On the genus *Hilipus* and its Neotropical allies," in which fifty-five new species were described, all of which were exhibited; nine new genera were characterized.

Mr. W. L. Distant read "Descriptions of new genera and species of Rhynchota from Madagascar."

Prof. Westwood communicated a paper entitled "Observations on the Hymenopterous genus *Scleroderma* and some other allied groups."

Mr. M'Lachlan directed the attention of Members to a paper by Dr. Adler, just published in the last part of Siebold and Kölliker's 'Zeitschrift' (Zeit. für wiss. Zoologie, vol. xxxv., pp. 151—246, pl. x.—xii.) on the dimorphism of oak gall-flies (*Cynipidæ*).

The Secretary read a report, from the 'Western Daily Mercury,' of the proceedings of the Yealmpton (South Devon) Police Court on the 8th of February last, when H. W. Horton, a farmer, was convicted under the Destructive Insects Act of 1877, of being in possession of living specimens of the Colorado Beetle, and was fined £5. The Secretary also read a trenchant leading article from a later issue (February 12th) of the same paper.

Mr. Jenner Weir remarked that he had recently seen a living specimen of the *Doryphora* which had been brought to London in a barrel of potatoes.

*New Part of 'Transactions.'*

Part V. of the 'Transactions' for 1880 was on the table.

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April 6, 1881.

W. L. Distant, Esq., M.A.I., Vice-President, in the chair.

Donations to the Library were announced, and thanks voted to the respective donors.

*Election of Members.*

Dr. Victor Signoret (46, Rue de Rennes, Place St. Germain-des-Prés, Paris), was unanimously elected an Honorary Member, in the place of M. Achille Guenée, recently deceased.

Dr. G. W. Royston Pigott, M.A., M.D., F.R.S., F.R.A.S., &c. (Annandale, Eastbourne, Sussex), was balloted for and elected an Ordinary Member of the Society.

*Exhibitions, &c.*

Mr. J. Jenner Weir exhibited a beautiful specimen of a Noctua found at rest in a nursery-garden at Blackheath, in August last. It was apparently a new species, and there was some difference of opinion among the members as to whether it came near to the genus *Dicycla* or *Gortyna*.

Mr. R. M'Lachlan exhibited three species of the genus *Dilar*, Rambur, one of the rarest genera of Neuroptera-Planipennia. They represented *D. nevadensis*, Rambur, from Spain (the typical species), *D. Hornei*, M'Lach., from North-West India, and *D. Prestoni*, M'Lach., from Rio Janeiro; thus the genus, although numbering very few species, and of a strongly characterized nature, is widely distributed. Mr. M'Lachlan alluded especially to the singular unilaterally pectinate antennæ of the males and the long thread-like ovipositor of the females; this latter indicating some special habit yet to be discovered.

The Rev. A. E. Eaton exhibited, as a microscopic preparation, a specimen of *Haplophthalmus elegans*, Schöbl., a woodlouse new to the British fauna. Two specimens were found in a garden at Croydon.

Miss E. A. Ormerod exhibited two *Termites* nests, forwarded to her by Mr. Everard im-Thurn, from British Guiana. One nest was nearly spherical in shape, being about two feet six inches in circumference, and encircled the small branch of a tree; in structure it consisted of a number of irregular chambers or passages, the walls of which were composed of a blackish granular substance from gnawed wood; these nests were also stated to be very hard and ligneous towards their centre. Miss Ormerod said that in the packing-case in which this specimen was received there was a great quantity of blackish sawdust, apparently from the injured outer covering, part of which still remained, and somewhat resembled rough brown paper. Mr. im-Thurn

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had expressed his fears that "the thin black crust" of the nest would suffer in transit. A large number of the *Termites* from this nest were exhibited, consisting of two apterous forms, but mostly "soldiers." The nest now exhibited was said to be a small specimen of its kind, as they were very frequently found of from six to eight feet in circumference. The other nest was of the general Termite nature, being of hard clay and showing the usual irregular chambers, but these particular ground-nests were stated to be very rarely, if ever, of large size.

Mr. F. P. Pascoe remarked that many years ago he had found a similar tree-nest in a forest in the Organ Mountains in Brazil, but did not at the time examine it; he learnt, however, that it was known there as the "negro-head," a name very suggestive of its appearance. The year before last he had met with a somewhat similar nest near Pará, but larger and of a lighter colour. They were both attached to trees, five or six feet from the ground, not to branches. The Pará nest was very friable, and on breaking into it scores of the "rostrate" workers rushed out (some of which, with portions of their nest, were exhibited). These workers have a very large head conically produced to a sharp point in front, the mouth underneath; and they are without eyes.

Mr. M'Lachlan regretted that no winged *Termes* had been exhibited or procured, since without the winged insects it was almost impossible to determine the species with certainty. The specimens obtained from the tree-nest, exhibited by Miss Ormerod, represented two forms of workers, *viz.*, the ordinary condition and a form occurring in many species of *Termitidæ*, known as nasute or horned workers ("Arbeiter nasuti"). It was a small species, and evidently allied to that exhibited by Mr. Pascoe, which was probably *Termes opacus*, Hagen. In Hagen's "Monographie der Termiten" (Linnæa Entomologica, vol. x.), much information was given in a collective form on the habits of these insects; further interesting observations are to be found in Dr. Fritz Müller's paper "Beiträge zur Kenntniss der Termiten," published in the 'Jenaische Zeitschrift für Medicin und Naturwissenschaft,' vol. vii., and in notes by Mr. H. G. Hubbard "On the Tree-nests of *Termites* in Jamaica" that appeared in the 'Proceedings of the Boston Society of Natural History,' vol. xix.

Mr. T. R. Billups exhibited a specimen of the rare *Ichneumon erythræus*, Gr., taken at Headley Lane, Surrey, in March last, remarking that the British Museum collection contained but two examples of this species. Also a specimen of *Lasiosomus enervis*, H.-Sch.,—a rare British Hemipteron,—which he captured at Weybridge on the 9th March last.

The Secretary announced the death of Herr J. H C. Kawall, at the age of eighty-two, on the 29th January last, at Pussen, near Windau (Kurland, Russia), of which village he had been pastor fifty-one years. Kawall was a general entomologist, but especially studied the Hymenoptera.

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*Papers read, &c.*

Mr. R. M'Lachlan read the "Description of a new species of Corduliina (*Gomphomacromia fallax*) from Ecuador."

Mr. J. B. Bridgman communicated a paper entitled "Some additions to Mr. Marshall's Catalogue of British *Ichneumonidæ*," in which seventy-nine species were introduced as new to the British fauna, twelve being described as new to science. Mr. Billups and Mr. Fitch exhibited most of the specimens referred to. Mr. Fitch also made some remarks on the various apterous and subapterous forms occurring in the *Ichneumonidæ* and *Cryptidæ*, especially alluding to the instability and want of precision in many of the specific and generic characters amongst the *Pezomachus* group.

*New Part of 'Transactions.'*

Part I. of the 'Transactions' for 1881 was on the table.

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May 4, 1881.

H. T. Stainton, Esq., F.R.S., &c., President, in the chair.

Donations to the Library were announced, and thanks voted to the respective donors.

*Election of Members, &c.*

Mr. R. W. Fereday (Christchurch, Canterbury, New Zealand), hitherto a Corresponding Member, and Mr. Charles Foran (Marshfield House, Eastbourne, Sussex), were balloted for and elected Ordinary Members of the Society. Mr. James Edwards (Bracondale, Norwich), was elected an Annual Subscriber.

*Exhibitions, &c.*

Mr. Roland Trimen exhibited and made remarks on the following Lepidoptera, all of which had been taken in Natal by Col. J. H. Bowker:—

The sexes of *Pieris Saba*, Fab.*, captured *in copulâ* near the Umgeni in January last. Mr. Trimen remarked that, as long ago as 1837, Boisduval had united the strikingly dissimilar sexes of this Pierid; but he was not aware that there was any record of positive evidence in support of that lepidopterist's opinion. He was especially pleased that Col. Bowker should have been the captor of this pair; as in spite of his intimate acquaintance with the extraordinary sexual disparity prevailing among butterflies, he had

* Figured, Trans. Ent. Soc., 1881, pl. ix., figs. 3, 4.

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been very sceptical as to the identity of *Pieris Saba*, Fab. (the female form, which is more black than white) with *Pieris orbona*, Boisd. (the male form, which is almost entirely white). Mr. Trimen further expressed his opinion that the black and white female of this butterfly was probably modified in mimicry of a common and evidently protected diurnal moth, *Nyctemera apicalis*, Wlk., which frequents the same localities.

The sexes of *Diadema mima*, Trimen, taken paired at D'Urban on February 11th last. This butterfly is an accurate mimic of *Amauris Echeria*, Stoll., copying the variety with white-spotted fore wings, which is common in Natal. The pair exhibited presented no particular disparity, except in the much smaller size of the male; but Mr. Trimen mentioned that he had recorded (Trans. Ent. Soc., 1873, p. 107, note) the capture in Natal, by Mr. H. C. Harford, of a male *D. mima* in copulâ with a female *D. Anthedon*, Dbld., of the form named *marginalis* by Mr. Butler. He also then called attention to the unstable characters of the African group of *Diadema* (*Euralia* of Doubleday), to which these differing but closely allied forms belong, and to the extraordinary accuracy with which they mimicked the various species of *Amauris*, even to the variations presented by the latter.

The larval cases, pupæ, and imagos of a *Tinea* (apparently *T. gigantella*, Stainton), found inhabiting the hoof of a horse. Col. Bowker writes that he sent to England a hoof of the troop-horse killed with the Prince Imperial in Zululand in June, 1879, to have it mounted as an inkstand. Since the return of the inkstand he had been obliged to take it to pieces to get rid of the moths, which were still emerging as late as February last. *Tinea gigantella* (originally described by Mr. Stainton from specimens brought by Mr. Trimen from South Africa in 1859) is considered by the founder of the species as synonymous with Zeller's *Scardia vastella*, whose larva is noted as feeding on the horns of antelopes. The closely allied *T. orientalis* has also been recorded by Mr. Stainton (Ent. Mo. Mag., xv., 133) as having, in all probability, been bred from buffalo-horns brought from Singapore.

Mr. Stainton remarked that it would be interesting to know whether these *Tineæ* fed on the horns or hoofs of *living* animals. He believed Lord Walsingham had prosecuted enquiries on the subject with at present a negative result.

The Secretary read a letter received from the Colonial Office relative to the appearance of *Phylloxera vastatrix* on the vines of Victoria, also a letter addressed to the Colonial Office, from the Royal Gardens, Kew, by Mr. W. T. Thiselton Dyer, on the subject, and laid the minutes of evidence taken by a select committee of the Legislative Assembly, received as an enclosure, on the table.

The President stated that this communication had been considered by the Council of the Society, and they had resolved that Messrs. Trimen,

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M'Lachlan, and Fitch be appointed a Committee to investigate the matter and report.

*Papers read.*

Mr. Arthur G. Butler communicated a continuation of his "Descriptions of new Genera and Species of Heterocerous Lepidoptera from Japan," treating of the *Noctuæ*.

Mr. Roland Trimen read a "Note on the capture of the paired sexes of *Papilio Cenea*, Stoll (*P. Merope*, auct.), in Natal," and exhibited the specimens, which had lately been received from the captor, Col. Bowker.

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June 1, 1881.

H. T. Stainton, Esq., F.R.S., &c., President, in the chair.

Donations to the Library were announced, and thanks voted to the respective donors.

*Election of a Subscriber.*

The Rev. E. N. Bloomfield, M.A. (Guestling Rectory, Hastings, Sussex), was balloted for and elected an Annual Subscriber to the Society.

*Exhibitions, &c.*

Mr. J. Jenner Weir, on behalf of Mr. J. W. Douglas, read the following notes on various Homoptera, and exhibited the specimens referred to:—

*Aleurodes carpini*, Koch. Found on the underside of the leaves of hornbeam-bushes at Bexley Wood, on May 28th.

*Orthezia cataphracta*, Shaw. Females found in abundance in April and May, at the roots of *Carex* and grass, growing among damp moss, at Pitlochry, Perthshire, by Mr. G. Norman. Living examples in their native moss were also exhibited.

*Orthezia*, n. s. Females from Pitlochry, collected by Mr. Norman, and the same species taken at Bexley Wood on May 28th. Mr. Douglas considered this a new species, and proposes to call it *O. Normani;* the disposition and form of the flaky cereous covering matter being, especially on the dorsal region, entirely different from either *O. cataphracta* or *O. urticæ*.

*Orthezia urticæ*, Linn. Adult females and larvæ. Also three living examples found yesterday (May 31st) at Darenth Wood, with a piece of the plant (*Stellaria holostea*) on which they exclusively occur.

Mr. Douglas referred to the new *Orthezia* thus:—"It will be observed that the waxy covering, on the dorsal region, in *O. cataphracta* follows the

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form of the segments, only divided by a central longitudinal line. In the new species the dorsal covering consists of three large, thin, forwardly directed, separated plates, the anterior side of which is deeply notched in the middle, almost as far as the posterior side; these are followed by three or four straight, narrow, segmental bars. The lateral laminæ are very different from those of *O. cataphracta* (the structure of these is seen in the reversed specimens), and the posterior ones entirely cover the long marsupium. *O. urticæ* is exhibited to show how the dorsal lamination—two longitudinal ridges of closely overlapping, backwardly directed, scales—differs from both the other species."

Mr. T. R. Billups exhibited a long series of *Crabro clavipes*, Linn., bred this year from *Cynips Kollari* galls, collected at Wimbledon. Also a specimen of *Molorchus minor*, Linn., taken at Headley Lane on May 9th last, feeding on larch. Mr. Billups observed that this Longicorn was apparently rare in Britain, as Dr. Power had only met with one specimen, this also on larch, and that Mr. Douglas took two at Headley Lane sixteen years ago.

Mr. E. Saunders said he took a specimen of *M. minor* at Wandsworth the year before last.

Mr. John Sang, who was present as a visitor, exhibited the following British Lepidoptera:—A gynandromorphous *Lycæna Icarus* (*Alexis*), the right side having the female colouring throughout and the left side male, with a stripe of the female colouring in each wing; a variety of *Lycæna Medon* (*Agestis*), having a white spot in the centre of each hind wing; two varieties of *Abraxas grossulariata*, one having the left fore-wing almost black, the other three being normally marked; a variety each of *Stigmonota dorsana* and *S. regiana*; two specimens of *Micropteryx fastuosella*, captured this spring; two specimens of *Gracilaria imperialella*, taken at Richmond, Yorkshire; series of *Nepticula ulmivora* bred from elm, of *N. splendidissima* from bramble, of *N. lapponica* from birch, and a specimen of *N. Tengstræmi* bred from *Rubus Chamæmorus*.

The Secretary read a communication from Mr. G. E. Piercey, asking for the identification of a creature which proves so noxious to travellers in Central Asia, and which is several times lately mentioned by the 'Daily News' special correspondent amongst the Tekké Turcomans, under the name of "Shep-quez" (= "bite the stranger").

Mr. E. A. Fitch thought most probably the creature referred to was the *Argas persicus* of Fischer de Waldheim; the habits of this tick and the effects produced by its attack, as related by Kotzebue and Dupré, agreeing fairly well with the account given in the correspondent's extracts.

Mr. W. F. Kirby remarked that the symptoms of the bite of the so-called "poisonous bug" of Persia (*Argas reflexus*), as described at a previous

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meeting, so much resembled those of malignant pustule—a disease well-known to be conveyed by flies—that it would be important to ascertain whether the bite of the *Argas* was itself venomous or merely a vehicle for the conveyance of morbific matter.

The Secretary read the following report of the committee appointed at the last meeting:—

*To the Council of the Entomological Society of London.*

GENTLEMEN,—We, the undersigned, appointed a Committee to consider a communication from the Colonial Office relative to the supposed occurrence of *Phylloxera vastatrix* upon the Vines in the Colony of Victoria, Australia, beg to present the following Report:—

We have carefully read and considered the mass of evidence embodied in the 'Report of the Select Committee of the Legislative Assembly of Victoria upon *Phylloxera vastatrix*,' forwarded by the Colonial Office with their letter.

A large mass of this evidence, both as regards the questions put to the parties examined and their answers thereto, have little or no bearing upon the subject. From the conflicting nature of the evidence, it is tolerably clear that more than one insect, or animals allied to insects, have been accused of being the actual *Phylloxera*. The question remains as to whether the pest actually exists in the colony.

The majority of the witnesses examined refer especially to the presence on the bark or roots of the Victorian vines of minute yellowish or orange-coloured creatures. These might be *Phylloxeræ;* on the other hand, they might be harmless *Acari* (mites), such as are always found on decaying vegetable matter; and indeed the evidence of Mr. Ritchie, and others, and the concluding sentence of paragraph 4 in the Report, rather favour the latter idea.

We nowhere find in the evidence any clear indication that *the nodules on the young rootlets* of the vines, so characteristic of the presence of *Phylloxera*, and the primary cause of the damage occasioned to the vines by its attacks (the rootlets being rendered incapable of performing their functions), have been observed in Victoria; although a passing remark by Mr. Wallis (p. 29, 838) may refer thereto. This is especially noticeable, seeing that such a condition is figured on Plate I., and is mentioned in the Report, paragraph 4.

This brings us to the important question as to whether the figures on the plates (especially that of the rootlets on Plate I.) were taken from actual Victorian specimens or copied from other figures in some European or American work. If they were copied from the actual sketches taken by M. Boutan from the Geelong specimens mentioned in his letter printed as Appendix C, or from some other Australian source, we think there can be

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no doubt as to the occurrence of the *Phylloxera* in the colony. If not, we prefer to consider its occurrence there as still an open question.

M. Joubert states that in 1873 specimens were sent to one of the London Microscopical Societies. Of these we can find no trace, and the report then received does not appear to have definitely determined the nature of the creatures.

We urgently recommend that immediate steps be taken to forward to this Society specimens of the supposed *Phylloxera* carefully mounted in Canada balsam as microscopic slides (but *not crushed*), together with *the young rootlets* of vines, supposed to be attacked, preserved in pure alcohol. Also we should like to see, in pure alcohol, specimens of the creatures (in addition to those on the slides) found congregating in the fissures of the bark and roots. It is possible that the steps taken to eradicate all vines supposed to be affected may be altogether unnecessary. In connection with this, we would remark that a panic existed a short time ago amongst the vine-growers of the Cape Colony owing to the supposed presence of *Phylloxera*, and that minute examination of the vines themselves presented no proof whatever, and indeed no indication of such presence.

We also recommend that the Victorian authorities should themselves carefully compare the evidence with the information and figures contained in Prof. Max Cornu's official 'Études sur le *Phylloxera vastatrix*,' and also with the various memoirs by M. Jules Lichtenstein, of Montpellier, on the same subject.

Supposing the *Phylloxera* actually exists in the colony, we would remark that the authorities appear to be fully acquainted with the methods most in favour in France, &c., for lessening or putting a stop to its ravages. We prefer to regard the indiscriminate prohibition of the importation of plants of all kinds as unnecessary.

Finally, we urgently recommend a high state of cultivation, so as to keep the vines in vigorous health, as conducing to render the attacks of the *Phylloxera* less serious should it exist in the colony, or, supposing it do not now exist, should it unfortunately be introduced.

We remain,

Your obedient servants,

ROBERT M'LACHLAN, F.R.S., &c.
ROLAND TRIMEN, F.L.S., &c.
EDWARD A. FITCH, F.L.S., &c.

The Secretary read a communication from the Colonial Office, enclosing a report from Her Majesty's Vice-Consul at the Dardanelles, respecting the appearance in the Troad of an insect alleged to be destructive to the locust eggs; and asking for an opinion as to the possibility of the introduction of this insect, should its habits be correctly described, into Cyprus.

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The President stated that this communication had been considered by the Council of the Society, and they had resolved that Sir Sidney S. Saunders, Messrs. C. O. Waterhouse, and E. A. Fitch be appointed a committee to investigate the subject and report.

*Papers read, &c.*

Lord Walsingham read a paper entitled "The *Tortricidæ*, *Tineidæ*, and *Pterophoridæ* of South Africa," which included a complete list of the described South African species, characterizing several as new, which had lately been collected by Mr. W. D. Gooch in Natal, and made remarks on the affinities and general geographical distribution of the species, a few of which were exhibited.

Mr. A. G. Butler communicated a memoir "On the genus *Sypna* of Guénée, a group of Lepidoptera of the tribe Noctuites."

Mr. W. L. Distant communicated "Descriptions of Rhynchota from the Australian and Pacific Regions," including, with other *Pentatomidæ*, four new species of the genus *Menida* from Australia.

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July 6, 1881.

H. T. Stainton, Esq., F.R.S., &c., President, in the chair.

Donations to the Library were announced, and thanks voted to the respective donors.

*Election of a Member, &c.*

Mr. George Henry (38, Wellington Square, Hastings) was balloted for and elected an Ordinary Member of the Society. Mr. A. S. Olliff (36, Mornington Road, Regent's Park, N.W.) was elected an Annual Subscriber to the Society.

*Exhibitions, &c.*

Mr. W. L. Distant exhibited the sexes of *Morpho Adonis*, Cram.; the female of this butterfly apparently had previously been quite unknown.

Miss E. A. Ormerod exhibited some elm-leaves received from Islay, Argyll., which were almost bleached, the parenchyma being cleared away by minute larvæ; also several sawfly larvæ from a meadow at Rochdale, Lancashire, where they were committing extensive ravages; specimens of a sawfly larva from Clitheroe, Lancashire, received with the Noctua larvæ now so destructive to grass in that district; and further specimens of a sawfly larva received from Marlborough, Wilts, where it is attacking the

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wheat. Miss Ormerod also exhibited living specimens of the Noctua larvæ, which lately occurred quite as a "plague" at Clitheroe, and observed that these differed somewhat from the published descriptions of the larva of *Charæas graminis*.

Mr. H. T. Stainton remarked that he did not certainly know the larva of *C. graminis*, but believed those now exhibited belonged to that species; with regard to the elm-leaf blotchers, he did not recognise them as Micro-Lepidopterous, but thought possibly it was a Coleopterous larva attacking them.

Mr. E. A. Fitch recognised the sawfly larvæ from Rochdale as belonging to the *Doleridæ*, and said that he had received similar larvæ from Romford, Essex, and Huddersfield, Yorkshire; in both localities they were sent as doing damage to the grass crops; he also observed how little was known of the life-histories of the numerous species of *Dolerus*.

The Rev. A. E. Eaton exhibited drawings by Mr. A. T. Hollick, illustrating some *Ephemeridæ* nymphs in Dr. Hagen's collection. One of the sets, concerning the insect described by Dr. Hagen as *Ephemera* (?) *pudica* in 1861 and provisionally ranked by him in 1875 with *Heptagenia*, showed its nearest ally to be *Ephemerella*. The remaining sets illustrated the nymphs of ——, a nameless genus allied to *Palingenia* (restricted) from Brazil, a *Hexagenia* and three nameless genera (besides *E. pudica*) from North America, allied to *Ephemerella*, a *Callibætis*? from Peru, and a *Chirotonetes*? from North America.

Sir Sidney S. Saunders exhibited several female specimens, with larvæ and pupa-case of *Callostoma fascipennis*, Macq., received from Mr. Frank Calvert of the Dardanelles; the larva of this fly lives in the egg-cases of locusts and feeds on the eggs. Several of these egg-cases and a young locust (*Caloptenus italicus*), but two days old, which had been bred by Mr. F. Enock, were exhibited. Also a large box containing numerous specimens of *Bombyliidæ* which Sir Sidney Saunders had himself collected in the South of Europe. Sir S. Saunders believed several of the species represented to be undescribed.

The Secretary read the report of the Committee appointed at the last meeting to enquire into the history of the insect feeding on the locust-eggs in the Troad, respecting which a communication had been received from the Colonial Office, as follows:—

*To the Entomological Society of London.*

Gentlemen,—According to your instructions, we have carefully considered the despatch of Vice-Consul Maling at the Dardanelles to Acting Consul-General Wrench, a copy of which was transmitted from the Colonial Office, referring to the subject of an insect prevalent in that district whose larvæ destroy the locust eggs.

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It will be remembered that Sir John Lubbock exhibited specimens of these adult larvæ at the November meeting of our Society last year, received from Mr. Frank Calvert, of the Dardanelles; but some doubts were then expressed as to their being the offspring of any of the *Cantharidæ*, as was supposed.

Sir Sidney Saunders also possesses numerous living specimens of these same larvæ, hitherto undeveloped, transmitted to him last autumn by Mr. Frank Calvert, together with the following details respecting their habits:—

"In taking these insects I found the larvæ, with very few exceptions, to have left the pods, and rolled up in a torpid state, some buried amongst the pods, others below. The grubs did not quit the pods until these were softened by the rain, after several months' drought. It is strange amongst the number of larvæ I have taken up lately there are no pupæ that I have seen. May not the two specimens I found previously (as reported before) belong to some other species of insect?

"The female locust deposits her eggs, by preference, on hill country in arid uncultivated soils, *never* in land under cultivation. A fluid is secreted by the locust which, softening the hard soil, enables the lower part of the body, up to the hinder legs, to be worked in to the depth of about an inch. During this operation the locust is covered with others of its kind: in the localities where the insect is comparatively rare, the female locust, in the act of depositing her eggs, can be always detected by the small heap of other locusts which entirely cover her. The eggs, thirty to forty in number, are then deposited bodily (*sic*), enveloped in a thin membrane, in the form of a slightly curved cylinder about seven-eighths of an inch in length and in an erect position. The mucous liquid hardens the coating earth as it dries, and forms a case or cyst round the membrane which protects the eggs from the inclemency of the weather. Another remarkable feature in the natural history of the locust is that the presence of the parasite cannot be traced back—neither to former visitations of the locust, nor even to last year (1879), when it is to be presumed the destroyer was present, though in smaller numbers. I am informed that the larva has been found also in the neighbourhood of Smyrna. The Pasha of the Dardanelles, who has received reports from all parts of the province, informed me that the larva was found wherever the pods have been deposited, though in very various proportions, from one per cent. upwards. In those pods I examined I found a minimum of eight to as high as ninety per cent. attacked by the parasite. I have been assured from different sources that the flight of locusts was accompanied by numerous moths or flies."

In the recently published 'Second Report of the United States Entomological Commission, Washington, 1880'—to which, as well as to the

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First Report (1877) emanating from the same source, we invite special attention—Professor Riley supplies "Further facts about the natural enemies of the Locusts" (chap. xiii., pp. 259—271, pl. xvi.), and narrates the "interesting and hitherto unrecorded life-history" of two Dipterous insects belonging to the family *Bombyliidæ* (*Triodites mus*, O. S., and *Systœchus oreas*, O. S.), whose larvæ prey upon locust eggs to a considerable extent (p. 263), but the perfect insect was not bred until June of last year (1880). These larvæ closely coincide in structural details with those from the Troad, and have been found in Minnesota, Iowa, Missouri, Kansas, Nebraska, Utah, Washington Territory, and California. The *Systœchus* is observed abundantly darting and buzzing about over the ground in which the locust eggs were laid. The stout, small-headed, smooth, apod, recurved, yellowish white, Bombyliid larvæ, which attain to the length of about three-quarters of an inch, were first detected amongst the locust-eggs as early as April, but not generally until August. "The ground that was first filled with locust-eggs by the *Œdipoda atrox*, at the end of September looked as if scattered with loose shells, so thorough was the work of destruction." When full-fed these larvæ hybernate, either in cocoons or cells of their own making or in the empty egg-cases, and do not change to pupæ until the following spring. The pupal state lasts but for a short time. Mr. W. C. Lemmon, of Sierra Valley, California, reports, "The white grubs ate out and destroyed thousands of eggs last fall, but, to all appearance, have eaten nothing since, having lain dormant all the winter, and being now (June 13th, 1880) found still among the eggs, which are fast hatching out."

Within the last few days several specimens of the flies developed in the Troad have been received from Mr. Calvert, confirming the suspected Dipterous character of the locust-egg feeding larvæ from that locality, and showing the perfect insects to belong to the *Bombyliidæ*, but differing from any of the North American species referred to above. These specimens were accompanied by the following details, in a letter to Sir Sidney Saunders, dated the 14th of June:—

"Since writing to you, the following have been the results of my observations on the parasite. On the 24th of April I examined the larvæ in the ground; the only change was a semitransparent appearance which allowed of a moveable black spot to be seen in the body. On the 8th June about fifty per cent. of the larvæ had cast a skin and assumed the pupal state in their little cells; the colour yellowish brown darkening to grey in the more advanced insect. About one per cent. of the cells, in which were two skins and with an aperture to the surface, showed the perfect insect to have already come out of them. A grey pupa I was holding in my hand suddenly burst its envelope, and in half a minute on its legs stood a fly! thus identifying the perfect insect. It is not the *Epicauta*

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*verticalis* [*Cantharidæ*] expected; but you will no doubt be able to determine what it is when you see a specimen. The fly is about the size of a small wasp; the body covered with short grey hair; the abdomen striped black and grey; the wings membranous and transparent, with a dark marking across the centre; the head is furnished with a proboscis and a dart as fine as the sting of a bee or wasp. I found the fly, now identified, sucking the nectar of flowers, especially of the pink scabious and thistle, plants common in the Troad. (Later on I counted as many as sixteen flies on a thistle-head.) The number of flies rapidly increased daily until the 13th, when the ground appeared pitted all over with small holes from whence the parasite had issued. A few pupæ were then still to be found—a larva the rare exception. The pupal state thus appears to be of short duration. It was very interesting to watch the flies appearing above ground: first the head was pushed out; then with repeated efforts the body followed; the whole operation was over in two or three minutes: the wings were expanded, but the colours did not brighten until some time after. Occasionally a pupa could not cast off its envelope and came wriggling out of the ground, when it was immediately captured by ants. Unfortunate flies that could not detach the covering membrane, adhering to the abdomen, also fell a prey, as indeed many of the flies that could not get on their legs in time. The fly for the first time (13th June) was seen to pair, but this rarely. There is no disposition at present, so far as has been observed, on the part of the fly to approach the locust. It will be a point of the greatest interest to ascertain when and how the egg of the parasite is deposited—whether in the body of the locust before the insect buries its own eggs, or in the egg-pod in the ground. I have heard so much circumstantial evidence of the existence of a larva in the body of the locust that I no longer entertain any doubt on the subject; but whether it be the same as found in the pod is another question. [Certainly not.] The prolific increase of this fly shows it to be a natural enemy of the locust, a circumstance of which advantage should be taken. May not the strange non-hatching of expected locusts in infected districts, observed occasionally, be due to the destruction of the egg by the parasite?

"I send by post specimens of the 'parasite' locust-fly. Of the pupæ none are procurable, for they die when brought in-doors, thus showing that the insects require heat at this stage; and, if there be an intention of removing them from one country to another, this must be done when in the larval state. I inclose a skin thrown off by the pupa, which will give an idea of the shape. I shall write you further on the subject of this fly."

According to the observations of Dr. T. Algernon Chapman, of Hereford, "On the Economy, &c., of *Bombylius*," the process of oviposition is effected while hovering in proximity to the locality frequented by its



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victims; "bringing the extremity of its body close to the bank, yet not touching it, the small white egg being seen to be thrown with a short jerk against the bank" (Ent. Mo. Mag., xiv., 196). On several occasions he noticed very closely the spot in the rough and cracked earth, and repeatedly satisfied himself that the egg was not thrown into any burrow, though numerous around. This circumstance, as Professor Riley remarks, "would also imply that, as in the case of the blister-beetles, the newly-hatched larva must *seek* its food, and strengthens his suspicion that it would be found to be much more active than the mature larva" (*l. c.*, p. 269). It may be deemed highly probably that these "locust-parasites," so closely allied to the above-mentioned *Bombylius*, may resort to a similar mode of depositing their eggs, with corresponding results.

In many instances a retardation of development has been noticed in the American species, as in the blister-beetles, until the second year, and, on one occasion, even until the third year in the latter; whereby, as Professor Riley observes, the occurrence of migratory locusts at irregular intervals, in particular localities, would afford their parasites a better opportunity of finding appropriate food for their larvæ, and of thus perpetuating the species.

With regard to the possible introduction of these locust-enemies into Cyprus, it is by no means improbable that they may already exist there as elsewhere; but judicious protection might doubtless do much towards promoting their increase, and the consequent limitation of locust ravages. Characteristic figures and descriptions of the fly in its various states should, therefore, be widely circulated among the Cyprus cultivators for the preservation of these benefactors; whereas when indiscriminate destruction of the egg-pouches is practised, as now, obviously the friend is undergoing the same process of extermination equally with the foe. We should also recommend that attempts be made to increase the propagation of the former by importations in the early autumn, before the larvæ quit their provisional abodes; which we are disposed to believe might best be done by sending the cases promiscuously and unopened from those localities where a large percentage of these larvæ had been verified as likely to occur therein; those cases which are subsequently found to contain the parasite being forthwith interred with their inmates, broadcast in single layers, at suitable stations and at the requisite depth, in uncultivated soils; after which the larvæ will issue therefrom in October and November to construct their own cells in the earth. A similar process should be resorted to with any which may be found on the spot; while, in both instances, destroying those egg-pouches which are not thus tenanted by the parasite.

We annex figures of Mr. Calvert's specimens in their several stages, which have been prepared under the direction of Mr. Charles O. Waterhouse, of the British Museum. This species does not occur in the collection of

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that establishment; but it is obviously one of the *Bombyliidæ*, which, however, we have hitherto been unable to identify*.

We are, Gentlemen,

Yours obediently,

SIDNEY SMITH SAUNDERS.
CHAS. O. WATERHOUSE.
EDWARD A. FITCH.

*July* 6, 1881.

*Papers read, &c.*

Mr. F. Moore communicated some "Descriptions of new Asiatic diurnal Lepidoptera."

Mr. D. Sharp sent a communication "On the species of the genus *Euchroma*," having reference to the two known species belonging to that genus of the *Buprestidæ*.

Mr. J. W. Douglas communicated "Observations on the species of the Homopterous genus *Orthezia*, with a description of a new species" (*O. Normani*).

Mr. A. G. Butler communicated a further paper "On the Lepidoptera of the Amazons collected by Dr. James W. H. Trail during the years 1873 to 1875," Part IV. Geometrites. This part of the collection consists of eighty-two species, thirty of which prove new to Science.

Prof. Westwood communicated "Notes on larva of *Nycteribia*," by Baron R. Osten-Sacken.

Mr. W. F. Kirby read "Notes on new or interesting species of *Papilionidæ* and *Pieridæ* collected by Mr. Buckley in Ecuador."

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* The species is *Callostoma fascipennis*, Macquart (Mém. Soc. Roy. Sc. Lille, 1840, p. 355; pl. xv., fig. 5. Dipt. Exot., vol. ii., pt. i.. p. 77; pl. xv., fig. 5), described from a single female from Smyrna in M. Serville's collection. Herr Victor v. Röder says it also occurs in Greece. Dr. Loew demurs to Macquart's genus *Callostoma* being separated from *Mulio*, Latr. (Stett. Ent. Zeit., v. 159).

EXPLANATION OF PLATE XIV.

Fig. 1. *Callostoma fascipennis*, female.
1 *a*. Side view of head, exhibiting mouth organs extended.
1 *b*. Antenna, magnified.
2. Larva.
2 *a*. Side view of head.
2 *b*. Front view of head.
3. Pupa, viewed laterally.
3 *a*. Front view of head, magnified.
4. Locust egg-case, partially opened.

The hair lines indicate the natural sizes.

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August 3, 1881.

R. Meldola, Esq., F.C.S., &c., Vice-President, in the chair.

Donations to the Library were announced, and thanks voted to the respective donors.

*Exhibitions, &c.*

Miss E. A. Ormerod exhibited numerous specimens of Coleoptera and Hemiptera, in spirits, which had been collected by Mr. Bairstow in the neighbourhood of Uitenhage and Port Elizabeth, South Africa.

Mr. A. H. Swinton communicated some observations on *Iodis vernaria*, of which the following is an abstract:—This species is common on the Surrey Hills, and when in repose its wings hang limp and roof-shaped, with their exterior extremity rising above the head like a crest. This arrangement allows great vertical play to the abdomen, and much facilitates oviposition. On opening a box containing a living female, Mr. Swinton was surprised to perceive a most sickly smell of honey, resembling the scent of clematis blossoms (on which plant the larva feeds), but more pungent. He also observed small minute columns of emerald-green, attached here and there, which proved to be eggs, shaped like draughtmen, and piled up one on the top of another, in a slight curve, to the number of twelve or fifteen. The odour appeared to arise from the substance by which the eggs were agglutinated together. The moth flies at early dusk, and rests amongst the clematis during the day. Specimens of the moth and eggs were exhibited in illustration.

Mr. E. A. Fitch exhibited an ear of wheat on which were between fifty and sixty skins of *Siphonophora granaria*, all of which, without exception, had produced an *Allotria* or *Aphidius*. He also remarked that from his observations in one particular field he should think quite 99 per cent. of the Aphides, which were numerous, were infested with these parasites.

*Papers read.*

Prof. Westwood communicated the "Description of a new genus of Hymenopterous insects" (*Dyscolesthes canus*). The species, which is from Chili, is of somewhat doubtful affinities, but was thought to be an aberrant form of the *Formicidæ* or *Scoliidæ*.

Mr. A. G. Butler communicated a continuation of his "Descriptions of new genera and species of Heterocerous Lepidoptera from Japan," the descriptions of fifty *Geometræ* being included in the present paper.

Mr. R. Trimen communicated a memoir "On some new species of *Rhopalocera* from Southern Africa," six new species being described, from the extra-tropical region of South Africa.

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Mr. R. Trimen referred to a green and brown variegated *Hetrodes*, a Locustid common in South Africa, which possessed the power of squirting a greenish fluid to a distance of four feet.

Mr. W. L. Distant recommended reference to E. Graeffe's 'Entomologische Reisen im Innern d. Insel Viti-Levu' (Zurich, 1868).

The Secretary read a communication received from the Colonial Office with reference to the report upon the insect which attacks the eggs of locusts; also an enclosure from Sir Robert Biddulph, High Commissioner of Cyprus, enquiring whether the insect itself might not be destructive to crops and vegetation; and further, an extract from a letter from Lieut.-Col. Sir C. Wilson, H.M. Consul-General in Anatolia, recommending certain mechanical steps to be taken with a view to the limitation of locust attacks, also suggesting the introduction of the "Russet Starling, or Locust Bird," from Anatolia. It was pointed out that the fears of Sir R. Biddulph as to the *Callostoma* being itself destructive to crops were unfounded, and probably arose from an erroneous idea that the insect was one of the *Cantharidæ*, referred to in previous communications. The Russet Starling mentioned in Lieut.-Col. Wilson's despatch is doubtless the *Pastor roseus*, Linn., a migratory bird which no doubt already occurs in Cyprus. It is known to be particularly destructive to locusts generally, but also often seriously attacks the rice-fields in India.

*Papers read.*

Mr. D. Sharp communicated the descriptions of "Some new Coleoptera from the Hawaiian Islands." Thirty-four new species, collected by the Rev. T. Blackburn, were characterized; of the *Nitidulidæ*, eleven new species of *Brachypeplus*; of the *Anobiidæ*, thirteen new species referred to three new genera (*Xylstobius*, *Holcobius*, and *Mirosternus*); of the *Aglycyderidæ*, six additional species of *Proterhinus*; and of the *Cerambycidæ*, two new species of *Clytarlus*.

Mr. C. O. Waterhouse read a paper "On some new South American Coleoptera of the family *Rutelidæ*," resulting from the examination of some *Rutelidæ* collected by Mr. Buckley in Ecuador; which were described, together with others already in the British Museum Collection. Mr. Waterhouse remarked that hitherto the common dull black Brazilian *Antichira* had been referred to Linné's *A. tetradactyla*, but his description is "ater, lucens, lævis; Hab. Jamaica"; several specimens of this insect are in the Museum under Blanchard's name of *Macraspis melanaria*, for which Linné's name must be substituted. For the Brazilian species Mr. Waterhouse adopted Mannerheim's subspecific name of *M. dichroa*, given to the reddish variety.

Prof. J. O. Westwood communicated the "description of the immature state of a Ceylonese insect apparently belonging to an undescribed genus." Several immature specimens of this insect (*Dyscritina longisetosa*) were taken



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this spring by Mr. Thwaites in Ceylon, running about the surface of some garden mould. "It belongs to the great division of the mandibulate insects, undergoing an active state preceding the assumption of the imago form and possessing galeated maxillæ and articulated filamentous anal appendages." Drawings of the insect were exhibited.

Mr. P. Cameron communicated some "Notes on Hymenoptera, with descriptions of new species." Several new species of *Oxyura*, *Braconidæ*, *Chalcididæ*, *Fossores*, and *Tenthredinidæ* were described, from various localities; a synopsis of the British species of *Tenthredopsis* was included. Remarks on the structure of the ovipositor in the *Tenthredinidæ* were appended to the paper.

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November 2, 1881.

H. T. Stainton, Esq., F.R.S., &c., President, in the chair.

Donations to the Library were announced, and thanks voted to the respective donors.

*Exhibitions, &c.*

Mr. C. O. Waterhouse exhibited a variety of *Urapteryx sambucaria*, L., in which the transverse streaks in the fore wings were much broader than usual and closely approximate, captured by Mr. F. H. Waterhouse at Wandsworth. Also a specimen of a recently characterized Hemipteron, *Aëpophilus Bonnairii*, Sign., which Mr. Waterhouse discovered in the British Museum Collection, labelled "Polperro, Cornwall," and which had undoubtedly been set by the late Mr. F. Smith. He had no doubt the specimen was of British origin. Mr. Waterhouse remarked on the somewhat abnormal characters of this species, pointing out that it received its generic name from being a cohabitor with the coleopterous *Aëpus*, living on the sea-shore, under stones below tide-mark.

Mr. E. Saunders referred to Dr. Signoret's original descriptions of the species (Bull. Soc. Ent. France, 1879, p. lxxiii, and Tijd. v. Ent. xxiii. pp. 1—3, pl. i.; 1880) from specimens found, under stones deeply imbedded in the mud, in the Ile de Ré.

Mr. W. F. Kirby exhibited a new species of *Antheræa* (*A. macrophthalma*, Kirby), received by Mr. G. A. Higlett, who was present as a visitor, from the Gold Coast (West Africa). Although a true *Antheræa* it was remarkable for its resemblance in coloration to the Mascarene *Caligula Suraka*, Boisd.

Mr. Kirby also exhibited, on behalf of Mr. P. Cameron, numerous microscopic preparations of the saws, mouth parts, and other details of

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various *Hymenoptera*, including those of several *Tenthredinidæ* referred to in his memoir read at the last meeting of the Society, in which Mr. Cameron described what he considered the most useful process of mounting specimens for entomological working purposes; he recommended the use of a ¼-inch power.

Mr. R. M'Lachlan said these were the best examples of microscopic mounting he had seen since Curtis's preparations. He was extremely gratified to find Mr. Cameron using the saw as a means of specific distinction in the *Tenthredinidæ*, which had already been attempted by Zaddach. In using the microscope for entomological purposes Mr. M'Lachlan greatly preferred a ⅔-in. objective to the ¼-in.

Mr. Waterhouse also recommended the use of a ⅔-in. in preference to the ¼-in.

The Rev. A. E. Eaton pointed out the dependence on the maker of the various glasses when speaking of any particular power. For transparent objects he should strongly recommend Ross's lenses, but not for the semi-transparent and opaque objects now exhibited. In some instances he thought the use of a ¼-in. power necessary.

The Rev. A. E. Eaton exhibited pieces of honeycomb, constructed, by a community of hive-bees, in the open air, upon the outside of an exposed bare wall, quite unsheltered from the afternoon sun. Quite at the end of last May, W. Herbert Evans, Esq., of Forde Abbey, Dorset, noticed a protuberance on the western wall of the principal wing of his residence placed just underneath a string course in the masonry, about 40 ft. from the ground and 10 ft. below the battlements. For the moment he supposed it to be a curiously coloured swallow's nest, but on looking more carefully at it he perceived that it was the commencement of a honeycomb, in course of construction by the bees of an adjoining crevice. The comb eventually consisted of four slabs, hung parallel with the face of the wall, measuring each of them about 2 ft. by 2½ ft. The larger part of the combs was blown down during the gale of October 14th, when many of the cells were found to be tenanted by bee-grubs; but the bases of the combs still remain *in situ*, and are not yet deserted by the bees. The fragments exhibited were picked up from the ground under the nest on the 26th ult., after the bees had forsaken them and the grubs had departed.

The President remarked that he knew no other instance on record of the hive-bee building in the open air.

Mr. Eaton also exhibited specimens and coloured whole-figures of new varieties of *Armadillium vulgare*, L., and *Porcellio scaber*, Latr., together with a typical example of the latter species from Iceland. One variety of *Armadillium vulgare* represented a specimen in which the ground-colour of the body is bright orange-brown instead of black or greyish black, and the commonly present bright yellow markings are more or less conspicuous.

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Of this variety Mr. Eaton had obtained one example near Lisbon, another at Croydon in a hothouse, and a third on the Isle of Purbeck, in Dorsetshire. In the other variety the predominant colour is either brownish ochre or dull pale greenish yellow-ochre; the antennæ, head, and a transverse dorsal band at the base of each of the body segments, not extending into the epimera and mostly interrupted in the middle, blackened; in one example some of the anal segments are marked with a pair of dorsal blackened spots, and in two examples the ultimate pair of legs are blackened. Three specimens of this variety were found beneath a stone, with one example of the typical form, close to the sea-shore near Osmington Mill, in Dorsetshire.

In the new colour-variety of *Porcellio scaber* the whole animal is of a dull reddish rusty yellow (*rufescente rubiginosa*) on the back, and whitish beneath. The epimera in one example are paler than the body. During life the dark contents of the digestive tube are visible from above, and the pale marbling of the integument is inconspicuous; but when dried the former disappears, and the latter (under a lens) becomes plainly distinguishable. Two examples of this variety were captured on the Dorsetshire coast between West Lulworth and Osmington Mill.

The Icelandic specimen of *Porcellio scaber* was obtained by Mr. J. Coles, near Reykjavik, on September 10th last, at an altitude of about 40 ft. In Portugal this is a common species, from the seashore in the province of Minho to over 3000 ft. in the kingdom of Algarve, and to upwards of 4000 ft. in the province of Traz-os-Montes. It has an extensive distribution in other parts of Europe, and is quoted as an introduced species in North America.

Dr. H. C. Lang exhibited a specimen of *Lycæna Icarus*, Rott. (*Alexis*, W. V.), var. *Icarinus*, Scriba, in which the basal spots on the under side of the fore wings are absent. Dr. Lang thought it would be difficult to distinguish the female of this variety from *L. Medon*, Esp.

Mr. J. Jenner Weir remarked that he possessed specimens of this variety, but he believed it to be of very rare occurrence in Britain.

Mr. W. L. Distant exhibited a specimen of an undescribed species of *Cicadidæ* from Borneo, in which the opercula were developed to a greater extent than in any other species with which he was acquainted, being not only longer than the abdomen, but also extending beyond the lateral margins of the same. Mr. Distant did not, however, wish to be understood as implying that this insect, from the great size of the opercula, must necessarily be remarkable for the depth and intensity of the sound it produced over other Bornean species. In America *Cicada opercularis*, having the opercula well developed, was one of the shrillest and loudest musicians, but in the same region was found *Tympanoterpes gigas*, whose noise had been described as equalling the "whistle of a locomotive," but in

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this species there is no considerable development of the opercula. Most of the *Cicadidæ* were peculiar in having different times of the day when they stridulated, and Mr. Distant recommended this practically unworked field for observation to entomologists abroad.

Mr. T. R. Billups exhibited a female specimen of *Dufourea vulgaris*, Schk., captured on a bloom of ragwort on the banks of the Basingstoke Canal at Woking, August 1st, 1881. This was the first female taken in Britain.

Sir Sidney S. Saunders said he captured a male near Chewton, Hampshire, in August, 1879. He believed this genus was rare on the Continent, as Lepeletier de St. Fargeau had never met with specimens himself, but described a male and female from Latreille's collection.

Sir Sidney S. Saunders exhibited a species of *Scleroderma* received from M. Ed. André, of Beaune, who states that it was sent to him by an entomologist of Lyons, "ayant vécu à l'état de larve dans un pin maritime et au dépens d'une larve de Coléoptère." It coincides with the *S. domestica* described from Berlin specimens in Prof. Westwood's Monograph of the genus in the second volume of our 'Transactions,' the scape of the antennæ, however, not being obscure at the base.

Sir Sidney Saunders also exhibited specimens of two dipterous insects, *Oscinis frontella*, Fall., and *Drosophila fenestrarum*, Fall.; the former reared from wild figs forwarded by Mr. Frank Calvert, of the Dardanelles; the latter from the Egyptian sycamore figs. In both instances the parent flies appear to have entered these figs after the *Cynipidæ*, reared therein on the seed-germs, had escaped through a large aperture which they make by gnawing around the crown until this falls in. The slender white worm-like larvæ of the *Oscinis* were wriggling about amid the pulp of the fig, together with many of the fragments of the former occupants, chiefly males which never quit the fig; and a large number of the *Oscinis* pupæ—some of these obtained from their larvæ placed apart for identification—were found attached to the paper wherein the figs were enveloped, the flies emerging about three weeks later in September.

These figs were sent with the object of possibly obtaining from that locality specimens of the *Cynips Psenes* of Linnæus, found by Hasselquist near Smyrna in the figs of the "*Ficus Caricæ orientalis*," as described in his 'Iter Palæstinum,' edited by Linnæus in 1757, and therein adverted to under the names of *C. Ficus* and *C. Caricæ*, found (April 6th) in the same fig (*in eadem cum altero Ficu*), but the latter supposed to differ from the former in species or in sex, while minutely defining the oviduct of each; both having been united by Linnæus the following year, in his tenth edition of the 'Systema Naturæ,' under the denomination of *Cynips Psenes*.

The types of *C. Ficus* exist in the Linnean Cabinet at Burlington House, but no one appears to have met with it since that period. This

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*Cynips* is described as rufous (*corpus totum rufum*), the *C. Caricæ* having an oviduct twice the length of the body (*corpore duplo longior*); whereas those found by Gravenhorst in the *Ficus Caricæ* of the Tyrol—constituting his genus *Blastophaga*—were black (*nigro-æneus*), and their oviduct very short (*longitudine dimidæ aut tertiæ partis abdominis*). The specimens received from the Dardanelles correspond with the latter (*B. grossorum*, Gr.), both sexes being obtained from these figs, as, in other instances, from Montpellier and Corfu, although neither Hasselquist nor Gravenhorst detected the apterous males, which Mr. Calvert describes as "an insect that is found always on its side, the abdomen shaped like that of a shrimp, which it draws in." They are occasionally found roaming within the fig with the abdomen partially deflexed, but are usually concealed in a recumbent attitude at the lower extremity of the stems to which the seed-vessels are affixed, the abdominal region recurved beneath the thorax and projecting beyond the head.

Mr. Calvert's attention had also been directed to the subject of "Caprification," if practised in those parts, and to the popular traditions associated therewith. He says, "The *Cynips*, I am told by the natives, is said to promote the fructification of the fig; for this purpose, in plantations, one of the wild trees (or 'male fig,' as it is also called) is planted in the proportion to seven or eight of the cultivated tree. Without the aid of the wild fig the cultivated tree is said to cast a portion of its fruit, which it can be made to retain by taking the above measures. The *Cynips* avoids the sun and comes from the figs in the evening and early morning; calm and fine weather is considered propitious for the *Cynips* to fructify the cultivated fig; wind and rain the contrary. I have cut open many of the cultivated figs in July, but have not detected the presence of the *Cynips*, or of any other insect or larva therein."

This coincides with M. Bernard's remarks—cited by Prof. Westwood in his memoir on "Caprification" in our 'Transactions' (vol. ii. p. 214)—that he could never find the insect in the cultivated fig, and that in reality it did not quit the wild fig until the stamina were mature, and their farina dissipated; adding that what they might have brought on their wings must be rubbed off in the little aperture which they form for themselves.

All commentators, however, on this process—Linnæus and Latreille among the number, but excepting Olivier—appear to have assumed *a priori* that the *Cynips* actually effects an entrance into the domestic figs (*s'introduisent par l'œil*); although it is not to those matured in July, when this process is resorted to, but to the subsequent crop obtained from the same trees the following month, that their influence is ascribed. To these later figs Mr. Calvert's researches were also extended, with the same negative result; for he states (Sept. 21st), "I have examined many of the August figs in all stages, and cannot find a trace of the *Cynips*. The only insect

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noticed was a larva in the over-ripe fruit." Other figs of the second crop, subjected to the aforesaid process at Corfu and forwarded by post at that period, have proved equally devoid of any occupants.

Hence it would appear that Olivier, after a long residence in the islands of the Greek Archipelago, was justified in denouncing this practice as a popular delusion, there being no corroborative evidence to attest that these insects ever penetrate into the cultivated figs, as alleged, and that they can thus be instrumental for the conveyance of pollen or the promotion of fructification in any way.

Mr. M'Lachlan remarked that he had lately examined the Linnean Collection, in company with a German botanist interested in the fig insects, and had failed to find the types of *Cynips Psenes*.

In reply Sir Sidney Saunders stated that the specimens of *C. Ficus* in the Linnean Cabinet, although unlabelled, correspond with Hasselquist's description, in their rufous colouring; and that, besides those mentioned by Mr. M'Lachlan as enclosed in a wrapper, he had seen others (of which he took note in December, 1878) displayed on a paper (rather than card), being thus mounted like those of *Cynips Cycomori*, Hasselq., the latter authenticated as such by Linnæus himself, and in juxtaposition therewith; but that he had not an opportunity of examining whether both were furnished with subjacent mandibular appendages like the species whose generic identity with Gravenhorst's *Blastophaga* had been long since ascertained by Prof. Westwood (*loc. cit.*). Hasselquist describes the habits of his *C. Ficus* as identical with those of Gravenhorst's species, but the structure of the former had not been sufficiently defined by him to determine their generic association; although doubtless these specimens, coinciding as aforesaid with those recorded in the 'Iter,' constitute the genuine types of *Cynips Psenes* of Linnæus.

Mr. H. T. Stainton exhibited some curious cases said to be constructed by lepidopterous larvæ, and read the following remarks communicated by Dr. F. Buchanan White:—

"The peculiar structures herewith shown are the work of lepidopterous larvæ which inhabit the closed tubes which form the conspicuous part of the structure. These tubes, which each form a *cul-de-sac*, are attached to the dry excreta of dogs (*alba græca*), and are found on the bare ground on the high land behind Aden. The tubes, I understand, are erect when in their natural position. The larvæ possibly feed on the particles of bone in the excreta. The present specimens were given to me by the finder, Dr. George Hay, Port-Surgeon at Aden, who I hope will yet discover the imago of the maker. A tube which I opened at the time Dr. Hay gave me them contained a living larva, but I failed to rear it."

Mr. Stainton said it was remarked in our 'Proceedings' that "no other insect [than *Dolerus palustris*, Klg.] was known to feed on *Equisetum*"

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(*ante* p. xxii). He was requested by Mr. Buckler to refer to his description of a larva of *Hydræcia micacea*, Esp., found feeding on the roots and stems of *Equisetum arvense* and later on *E. fluviatile* (*cf.* Ent. Mo. Mag., vi. 164).

Mr. Stainton exhibited a specimen of *Cerura vinula*, L., which had been bred by Mr. Piffard from a larva found in Hertfordshire, and from the description, more especially of the larva, in Kirby's 'European Butterflies and Moths,' p. 186, had been referred by him to *C. erminea*, Esp. Mr. Stainton and the members generally considered this specimen lacked the peculiar whiteness characteristic of *C. erminea*, and that it was only *C. vinula*. Mr. Stainton exhibited the figures of *C. erminea* larva in Freyer's 'Beiträge zur Geschichte europäischer Schmetterlinge' and 'Neuere Beiträge zur Schmetterlingskunde,' in Duponchel's 'Iconographie des Chenilles,' and in Boisduval and Rambur's 'Collection Iconographique et Historique des Chenilles d'Europe,' and made remarks on the same, especially referring to the difference between Freyer's and Duponchel's figures.

*Papers read, &c.*

Mr. A. G. Butler communicated the completion of his "Descriptions of new Genera and Species of Heterocerous Lepidoptera from Japan," treating of the Pyrales and Micros. Three new genera and twenty-nine new species were described. The descriptions of ten supplementary species belonging to various families were also included, a new genus of *Notodontidæ* (*Platychasma*) and of *Ligiidæ* (*Macrochthonia*) being characterized. In all the descriptions of one hundred and eighty new species were included.

Prof. J. O. Westwood communicated a memoir entitled "Notæ Dipterologicæ. No. 6.—On the minute species of dipterous insects, especially *Muscidæ*, which attack the different kinds of cereal crops"; giving a resumé of the descriptions and habits of the various species referred to by Linnæus, Zetterstedt, Bjerkander, Markwick, Olivier, Herpin, Guérin Méneville, Dagonet, Curtis and himself. Special reference was made to a species (*Oscinis avenæ*, Bjerk.) which this year had proved very destructive to housed oat grains, near Winchester.

Mr. Fitch remarked that Curtis's *Oscinis granarius* was most probably synonymous with this species. It differed from his *O. vastator* in having the base of the tibiæ black, not ferruginous, and the larva lived in the wheat-grains. Most probably it was the same species which the Rev. O. P, Cambridge had found this year in great numbers in Dorsetshire in a loft where some barley had been stored. Mr. Fitch also mentioned that on the heavy clay-land of Essex it was remarkable that wheat after a whole summer's fallow was almost invariably attacked by the young stem-feeding larvæ of *O. vastator*, Curt., locally known as "white maggot."

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December 7, 1881.

H. T. Stainton, Esq., F.R.S., &c., President, in the chair.

Donations to the Library were announced, and thanks voted to the respective donors.

Augustus R. Grote, Esq., M.A., President of the New York Entomological Club, was present as a visitor.

*Election of a Member.*

A. J. Scollick, Esq. (Albion Lodge, Putney, S.W.), was balloted for and elected a Member of the Society.

*Exhibitions, &c.*

Mr. W. C. Boyd exhibited a variety of *Ennomos tiliaria*, Bkh., in which the transverse streaks in the fore wings were closely approximate on the costa, uniting in the middle of the wing, and were confluent to the inner margin. The specimen was captured at light this autumn at Cheshunt.

Mr. C. O. Waterhouse exhibited specimens of *Scenopinus fenestralis*, Latr., with their pupa-cases, bred from dried roots of *Aconitum*; a specimen of *Phora rufipes*, Meign., bred from *Nematus ribesii*, and specimens of *Oscinis pusilla*, Zett., bred from stems of barley.

Mr. G. H. Verrall expressed surprise that the larva of *Scenopinus* should be found feeding on the *Aconitum* roots. This species was commonly known as "the carpet fly," and its larva mostly fed on old cotton or woollen materials, frequently on old greasy horse-cloths, the fly being a general inhabitant of stable-windows; hence its name.

Mr. E. A. Fitch remarked that he had bred *Phora rufipes* in some numbers, also a specimen of *Phora minor*, Zett.?, from the larvæ of *Nematus salicis*.

Mr. Verrall stated that he once boxed a living hornet (*Vespa crabro*) and several specimens of one of the *Phoridæ* emerged from it, after death.

Mr. F. P. Pascoe exhibited the larva of an ant-lion, taken alive by a London grocer from a barrel of currants received from Zante. Mr. Pascoe said that it had lived in his possession for more than a month, but apparently in a semi-torpid state, and he could not induce it to eat anything.

Mr. R. M'Lachlan regretted the imago could not have been bred; he did not recognise this larva, which was too large for either of the two common European species of *Myrmeleon*; neither was it *Palpares libelluloides*.

Mr. J. Jenner Weir remarked that the larva now exhibited was quite double the size of those which he had reared.



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Mr. R. M'Lachlan exhibited a curculionideous larva found by Mr. G. F. Wilson, of Weybridge, feeding in the bulbs of lilies (probably from Japan), which had proved very destructive to some of those plants grown in pots. It resembled an *Otiorhynchus* larva, but was probably more closely allied to that of a *Brachycerus* (*cf.* Ann. Soc. Ent. France, 1875, pp. 95-6; 1874, pl. iv. fig. i.).

Mr. A. S. Olliff exhibited a specimen of *Harpalus cupreus*, Dej., captured this year in the Isle of Wight by Mr. A. C. Horner, of Tunbridge.

Mr. H. B. Pim exhibited a specimen of a *Telephorus* which he captured last summer at West Wickham. This had been pronounced by the Rev. W. W. Fowler to be "possibly a variety of *T. lituratus*, Fall., but probably new."

The Secretary exhibited a box of locust egg-cases, with specimens of the Bombyliid larvæ found feeding on the eggs, transmitted by Sir Robert Biddulph from Cyprus; he also read a communication received therewith from the Colonial Office, and the following report on the same:—

*To the Council of the Entomological Society of London.*

GENTLEMEN,—We have considered the communication of 26th October received from the Colonial Office, enclosing copy of a despatch from Her Majesty's High Commissioner in Cyprus, dated Nicosia, 15th October (Cyprus, No. 392), relative to an insect destructive to the locust eggs. We have also carefully examined the box of specimens transmitted therewith, and in accordance with your instructions we beg to lay before you the following observations thereon:—

The box of specimens transmitted by Sir Robert Biddulph contained a quantity of earth in which were 58 locust egg-cases and 178 specimens of the egg-feeding larvæ, some of which quitted the cases soon after they reached us; also two glass tubes, in each of which were six specimens of the adult larvæ preserved in spirits, one containing specimens from the white earth-cases, and the other from those found in red earth.

There can be no doubt that these larvæ are those of *Bombyliidæ*, and they appear to be identical with the specimens previously received from the Troad. Whether the larvæ belong to more than one species of bee-fly, and whether they are those of the banded-wing species (*Callostoma fascipennis*, Macquart) is practically immaterial. They are certainly very closely allied if not identical and their life-history is similar.

These Bombyliids, or bee-flies, in the perfect state are rather large and conspicuous two-winged flies, which have a very rapid darting flight and a general habit of hovering over flowers, when they produce a bee-like humming, hence their popular name. They feed on the nectar of flowers exclusively, which they suck through their long proboscis when on the wing. They can in no way be destructive to crops in any stage.

Where the eggs of the particular species of bee-flies now under

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consideration are laid, is not yet known, but the apod larvæ are found in the egg-cases of the locusts, when less than half grown. The larvæ themselves may be unmistakably recognised, as curvate, fleshy, smooth, pale-yellow or creamy-white grubs, having a small and retractile but prominent, well-defined, shining brown head. They are flattened beneath, with a catenulated lateral border above, and measure from half to three-quarters of an inch in length. They leave these egg-cases in the autumn, forcing their way through the mucous deposit which closes the cases; they then live during the winter in the earth as larvæ, but feed no more. In the late spring (May or June) these larvæ change to brown spinose pupæ in the ground without any special cocoon or covering. Previous to the last change these pupæ force their way through the surface of the ground, and the perfect fly then makes its escape.

Sir R. Biddulph's despatch informs us that from 5 to 8 per cent. of the locust eggs are this year devoured by these larvæ. Since 800,000 okes of locust egg-cases have been destroyed in Cyprus this season to the end of October, it follows, from the lowest computation,* that about eighty millions of our powerful natural allies—the bee-flies—were associated with them, and must have been sacrificed if the destruction of the egg-cases took place before the larvæ of the fly had left the cases. It is during their long larval life that these insects can be specially protected. The very important problems now requiring solution are (1) the means of readily ascertaining those egg-cases which contain the bee-fly larvæ, and (2) how to retain the services of such a legion of auxiliaries and render their co-operation more effective hereafter.

These details, however, can best be worked out by the authorities on the spot, according to the means at their command and their method of collecting and disposing of the egg-cases in the several districts; while availing themselves of the facility afforded by the grubs in quitting these cases in the autumn for the purpose of completing their metamorphoses in the earth, at a period long anterior to the development of the locusts themselves. Thus, if the egg-cases were in the first instance deposited in parcels here and there in suitable localities, where the Bombyliid larvæ should of themselves be enabled at once to penetrate into the earth—allowing a sufficient time for this purpose, say until the beginning or end of November—the cases should then be destroyed, as presumably containing only locust eggs at that period.

We cannot conclude without expressing our satisfaction at the discovery of these valuable coadjutors in Cyprus, as suggested in our previous Report;

* Of the egg-cases received 1 oz., avoirdupois, contains 48 white-earth cases or 38 red-earth cases; say 45 cases average. An oke being 2¾ lb. English (44 oz. avoirdupois), there would be thus about 2000 egg-cases to the oke, and if 5 per cent. were affected, one oke of these cases would contain about 100 Bombyliid larvæ.

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and that it now only remains to give practical effect to this result by suitable measures to promote their preservation and development.

We are, Gentlemen,

Yours obediently,

SIDNEY SMITH SAUNDERS.
CHARLES O. WATERHOUSE.
EDWARD A. FITCH.

Sir Sidney S. Saunders read some further particulars received from M. Ed. André, of Beaune, Côte d'Or, relative to the *Scleroderma* exhibited at the last meeting, as follows:—

"Je suis en mesure de vous donner sur sa manière de vivre des renseignements assez complets que vous pourrez communiquer à la prochaine séance de la Société Entomologique. Je tiens ces insectes du Prof. Belon, de Lyon, et je vous transcris ci-dessous ce qu'il me dit à ce sujet dans sa lettre d'envoi:—

"'Etant à Arcachon (Gironde), j'avais eu l'heureuse chance de rencontrer plusieurs larves d'un longicorne fort rare, l'*Oxypleurus Nodieri*, Mulsant. J'avais soigneusement renfermé dans un coffre en bois les bûches de pin qui contenaient ce petit trésor et j'attendais avec impatience l'époque de la transformation en insecte parfait. Voyant que l'éclosion n'avait pas lieu, je me mis à fendre le bois et à examiner les galeries afin de constater où en etaient mes larves. Bientôt j'en rencontrai une qui était morte ou à peu près et qui me parut démesurément étirée; je l'examinai à la loupe et j'aperçus à l'intersection des divers segments abdominaux des parasites qui se nourrissaient de sa substance et devaient être la cause de sa mort. Il y en avait environ une douzaine. Au premier moment, contrarié de l'insuccès de mon élevage, je ne réfléchis pas à l'intérêt qu'il pouvait y avoir à laisser ces parasites subir leurs métamorphoses, et je jetai la larve morte avec son cortège de suceurs. Quelques jours après, je recommençai mon exploration et cette fois avec l'intention bien arrêtée de me rendre compte de l'identité des ennemis de l'*Oxypleurus*. J'ai eu, il est vrai, le désagrément de rencontrer deux larves dévorées par les parasites; il n'en restait plus qu'une partie de la peau; mais à l'ouverture de la galerie, j'aperçus de petites *fourmis* (*sic*) qui se misent à fuir. Celles que je recueillis étaient évidemment les insectes parfaits issus des larves que j'avais vues à l'œuvre de destruction.'

"Vous voyez par l'extrait qui précède qu'il n'est guère possible de demander davantage pour la connaissance des mœurs de notre *Scleroderma*. Il est bien regrettable que la larve n'ait pas été dessinée: mais je prierai le Prof. Belon de poursuivre l'an prochain cette étude, s'il retourne à Arcachon et il faut espérer qu'il pourra compléter ces données. D'après ce qu'il dit, il est facile de conclure que la larve de *Scleroderma* est un parasite externe et en tout semblable pour ses mœurs à celle du *Bethylus formicarius*,

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si bien décrite et figurée par Audouin en 1840. (Les insectes nusibles à la vigne, p. 189.) J'éspère que cette communication intéressera nos collègues de la Société Entomologique et vous pourrez leur assurer que je ne négligerai rien pour la compléter ultérieurement."

Mr. C. O. Waterhouse exhibited diagrams and read the following:—

*Remarks on the Types of* Cynips psenes *and* Cynips sycomori *in the Linnean Collection.*

"At the last meeting of this Society some remarks were made respecting the *Cynips psenes* and *Cynips sycomori*, with special reference to the specimens in the Linnean Collection. In consequence of that discussion I have taken an opportunity of visiting the Linnean Society, and have made a careful examination of the specimens now there.

"I found under the head of *Cynips* two sets of specimens belonging to two species. The two sets are mounted exactly in the same manner, and (what is most peculiar) on rice-paper.

"The first set consists of five specimens, all of the same species. On the rice-paper itself is written 'Sycomori,' and below that something which appears to be 'ex Cairo 1730,' or it is more probably '1750.'

"This insect is pitchy black, highly polished; the mandibles, the front margin of the head and a narrow space between two longitudinal frontal furrows are pale pitchy testaceous; the femora are pitchy, the tibiæ and tarsi very pale yellowish testaceous. At the back of the head there is an oval impression, and in front of this I think I detect an ocellus, and another on each side of the impression close to the basal margin. I mention these only with some reserve, as the dots alluded to are so extremely small that I could not be certain as to their being ocelli. On the under side of the head I find no traces of the curious ovate, striate appendages characteristic of *Blastophaga*. The antennæ are wanting in all the specimens. The abdomen has three anal appendages which are nearly as long as the whole insect, pale testaceous, the two outer ones dusky, and slightly thickened at the apex.

"These specimens agree very fairly with Hasselquist's description of his *Cynips cycomori* ('Iter Palæstinum,' 1757, p. 426). He states, however, that the legs and aculeus are 'ex albido ferruginei, apice pedum saturate ferrugineo.' The specimens in question have the femora pitchy, with the tibiæ and tarsi very pale; and the aculeus is pale, with the apex dusky. I do not think much stress should be laid on this slight discrepancy. It must be remembered that the specimens are only about a line long, and that magnifying powers 130 years ago were not what they are now; he himself states that the claws appeared to be wanting, or at least were not visible 'oculo mediocriter armato.'

"With regard to the writing on the paper, I may say that I believe it

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to be that of Linnæus. I have compared it with his handwriting, and the form of the capital S and other letters agree very well. It is not Hasselquist's, because he writes *Sycomori* 'Cycomori.' The locality 'ex Cairo' would agree with Egypt, assigned to the species by Hasselquist, and as he states that he captured the *Cynips ficus* in April, 1750, I think we may fairly conclude that this is the date written on the paper, and that these specimens were received by Linnæus from Hasselquist.

"Now with regard to the second species. Of this there are numerous specimens on the rice-paper, besides some unmounted ones wrapped in a separate paper. These agree with Hasselquist's *Cynips ficus* (Iter Palæst. p. 424), but they are not labelled in any way whatever. They clearly, however, belong to the same series as the *Sycomori*. These specimens are pitchy red; some paler, some darker; the antennæ are paler in colour than the head, but are darker at the apex than at the base. The whole under side of the insect, the legs, and the aculeus are pale pitchy testaceous; the claws are pale pitchy. This insect closely resembles a specimen which was sent to me by Sir Sidney Saunders as *Blastophaga grossorum*, Grav., but it is much paler in colour, with no æneous tint about it, and the head is slightly narrower than in *B. grossorum*.

"With regard to *Cynips caricæ*, Hasselquist (Iter Palæst., p. 425), it should be noticed that he says the aculeus is twice the length of the body. He says nothing of the *length* of the aculeus in *C. ficus;* but as he particularly points out the length of the aculeus in *C. caricæ* as a character by which to distinguish it from *C. ficus*, we may conclude that it is short in this latter species, as we find it in the Linnean specimens. The *C. ficus* and *C. caricæ*, united under the name of *C. psenes* by Linnæus, must certainly, therefore, be considered distinct species.

"It now only remains for me to point out that by some singular misfortune Prof. Westwood (Trans. Ent. Soc., ii., 1837, p. 220, pl. xx., f. 4) has described and figured *C. ficus* under the name *Blastophaga sycomori*, stating that he took his description from the Linnean specimens. How this occurred it is impossible now to say. But in all probability he took the specimens on both pieces of rice-paper to belong to the same species.

"Since the above was written Sir S. Saunders has shown me specimens of *Sycophaga crassipes*, Westw. (Trans. Ent. Soc., ii., 1837, p. 222, pl. xx., f. 5), and I at once recognise them as identical with the true *Cynips sycomori*, Hasselq."

In reply Sir Sidney Saunders remarked that we were much indebted to Mr. Waterhouse for his careful investigation of the Linnean *Cynipidæ*, showing that the *Cynips ficus* had been unwittingly confounded with the *C. sycomori*. He thought, however, that this circumstance might be reasonably ascribed to certain anterior complications, whereby Linnæus had been deluded in the first instance. To elucidate this transformation

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*ab ovo* (so to speak), he mentioned that Hasselquist, in his posthumous work, the 'Iter Palæstinum,' edited by Linnæus, described four species of *Cynips*, the last of which—the *C. ægypti*—might be dismissed at once, having no connection with this controversy: it was found on the *leaves* of various trees; it was dark green (*saturate viridis*), half a line long, with wings double the length of the body, and a very short oviduct. With the other three we had become more or less familiar by Mr. Waterhouse's instructive diagrams and comments thereon. They were designated (1) *C. ficus*, (2) *C. caricæ*, and (3) *C. cycomori*. But in the diagnosis of the first species a remarkable omission occurred which has been the primary cause of mistaken identity in the sequel, *no allusion being made to the relative length of the oviduct*, whether long or short.

In the *C. caricæ* he commences with avowing its great similarity to *C. ficus*,—"Partes omnes ut in antecedente,"—adding, however, that the abdomen was more slender and wider apart from the thorax. He then proceeds to define certain supposed structural differences in the oviduct, the dimensions of which are here supplied as *double the length of the body;* while his ideal divergences imply the mere union or disunion of the *terebra* and its demi-sheaths, the former exposed and separate from the latter in the one instance, but concealed within the retaining valves and only partially perceptible towards the apex of the abdomen in the other. Thus in the *C. ficus* he states, "Alculei (*sic*) duo sub cauda; superiore longiore, crassiore; inferiore breviore, tenuiore;" and, in the *C. caricæ*, "Aculeus caudæ unicus, corpore duplo longior, capelliaris, versus caudam subtus carinatus, crassior, parumque pilosus, reliqua parte tenuis, glaber, æqualis. Aculeus alius abdomen terminans, minimus, crassiusculus, subrigidus." He then informs us that they were both found in the same fig, "in eadem cum altero ficu habitat"; to which he appends a remarkable query as to the *sex* or *species* of his *C. caricæ*, "An præcedens ex altero sexu? an diversa species?"

No specimen of the latter exists in the Linnean Cabinet, but the length of its oviduct must be accepted as correct, considering Hasselquist's habitual precision; for, in expounding that his *C. ficus* had six legs, he was careful to add that three were attached to the thorax on either side—"Pedes VI., utrinque tres, omnes thoraci affixi." He was equally explicit as to the position of the legs in his *C. cycomori*! His *C. caricæ* may have been a solitary example, for he gives no indication to the contrary; whereas the *C. ficus* was found in multitudes, "in quovis fere germine unum reconditum." At all events Linnæus could never have seen the *C. caricæ*, for had he been enabled to compare the two he must have recognised a discrepancy in the length of their respective oviducts, to which no clue was afforded by the text; so that, scarcely confiding in the physiological proficiency of his pupil, he comprised *both together*, in his tenth edition, under a joint name—

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his *Cynips psenes*—without a word of comment; referring to the numbers and pages of the 'Iter' as mutually applicable, and thereby giving the sanction of his authority to a corresponding oviduct in each!

This metamorphosis involved a further complication at a later period: the *C. carica* had disappeared—no species having a similar oviduct was to be found;—the *C. sycomori*, marked as such by Linnæus, was there; but the few specimens thus authenticated were in a mutilated condition, reft of antennæ; while others, mounted in like manner and in better preservation, though bearing no name, were contiguous thereto: what could these be? Could they represent the *C. psenes* of Linnæus? Certainly not, for where was the oviduct double the length of the body? On the contrary, theirs was very short! No other species had been recorded—and why were these left *unnamed*, unless duplicates of the *C. sycomori*? Their oviduct might have been overrated before; its precise dimensions to be ascertained by subsequent measurement; whereby its relative proportions became eventually reducible to about half the length of the abdomen (*abdominis dimidii fere longitudine*). So also the peculiar characters of the trophi and antennæ—generically identical with the *Blastophaga* of Gravenhorst—were attributed to *C. sycomori*. Thus Linnæus, after having been inveigled into a misconception by Hasselquist, became himself a decoy for others!

Apart, however, from any circumstances attending such mistaken identity (which the President observed were quite intelligible), the *C. ficus*, hitherto playing a false part under a feigned name, must now be permitted to resume her appropriate rank and title as a true *Blastophaga*, on whose distinctive characters, illustrated in our 'Transactions' forty years ago, Professor Westwood lavished all his artistic talents and exquisite precision of detail—

"Nihil non tetigit—
Nihil quod tetigit non ornavit!"

On the other hand, the *C. sycomori*, superseded in her pretentions as aforesaid, has yet to reveal her natural affinities in relinquishing her generic pseudonym. The absence of mandibular appendages, as now ascertained by Mr. Waterhouse, coupled with a close resemblance in the oviduct to that of the genus *Sycophaga*—figured and described by Prof. Westwood on the same occasion—would seem to point to an intimate alliance therewith. The antennæ (unfortunately wanting in the types of the former) are described by Hasselquist as "clavatæ, verticis medio insertæ, approximatæ, capite duplo fere longiores"; thereby coinciding also with those of *Sycophaga;* but Linnæus, in giving an independent description thereof, defines them as "subulatæ." It would seem difficult to reconcile these conflicting characters assigned to the self-same types; although, as Mr. Waterhouse has noticed, these organs assume a different aspect towards the apex when viewed from above. The habitat of *Sycophaga crassipes*,

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Westw., is likewise identical with that of *C. sycomori*, both being reared from the seed-vessels of Egyptian Sycamore figs; wherein, moreover, no other species has been detected after persevering and careful research at various periods. It would thus seem that the latter, divested of her incognito, has been felicitously represented contemporaneously with her associate, although under different denominations;—the one merging into *Blastophaga ficus*, the other into *Sycophaga sycomori*.

*Papers read.*

Mr. W. L. Distant read the "Descriptions of new species belonging to the Homopterous family *Cicadidæ*." Twenty-two new species were described, three from the Neotropical, three from the Ethiopian, thirteen from the Oriental, one Palearctic, one Australian, and one from the Pacific Regions.

Mr. A. G. Butler communicated a "List of Heterocerous Lepidoptera collected in Chili by Thomas Edmonds, Esq. Part I. Sphinges and Bombyces." Three species of *Sphingidæ* and forty-one *Bombyces* were obtained; many valuable notes on the species are incorporated in the paper, and beautiful coloured drawings of the larvæ of the *Sphingidæ* and others were exhibited. Referring to the position of the *Hepialidæ* and *Psychidæ*, Mr. Butler remarked, "I strongly suspect the natural order to be *Cossidæ*, *Psychidæ*, *Hepialidæ*, *Castniidæ*, judging them apart from the Micro-Lepidoptera, some of which seem allied to *Cossus*."

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## ANNUAL MEETING,

January 18, 1882.

H. T. Stainton, Esq., F.R.S., &c., President, in the chair.

An abstract of the Treasurer's Accounts for 1881 was read by Mr. J. W. Dunning, one of the Auditors, showing a balance of £3 10*s*. 6*d*. in favour of the Society.

The Secretary read the following:—

### Report of the Council for 1881.

In accordance with the Bye-Laws, the Council begs to present the following Report:—

The vacancy in the list of Honorary Members occasioned by the death of the lamented lepidopterist, Achille Guenée, mentioned in the last Report, has been filled by the election of his distinguished compatriot, Dr. Victor Signoret.



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During the year 1881 the Society has lost four members by death, Messrs. John Gould, F.R.S. (an original member), William Garneys, John Gray, and Count G. de Mniszech, and one subscriber, Mr. E. M. Janson. Three members and one subscriber have resigned, while the names of two members have been removed under the Bye-Laws (c. xiv. 3). Eleven new members and subscribers have been elected, thus exactly balancing the number of losses.

The Society now consists of—

10 Honorary Members.
36 Life Members.
163 Ordinary Members.
34 Annual Subscribers.

In April, 1880, Miss G. Ormerod authorised the Council to offer two prizes of £5 each; (1) for the best Essay on the early stages of the life-history of *Sitones lineatus*, *S. crinitus*, or other injurious species, commonly known by the name of "Pea weevil"; (2) for the best Essay on methods of prevention or remedy for Insect attacks upon Pine or Fir plantations, with special reference to "weevils or sawflies." The Council desires to thank Miss Ormerod for her offer, but has to announce, with regret, that no essays have been received.

It is with considerable satisfaction that the Council has obtained, in three reports contributed by members of the Society, valuable information on practical subjects in which the Colonial Office were interested, and on which they had addressed the Society. The matters enquired into were the presence of the dreaded *Phylloxera* of the vine in Victoria, and the economy of an insect whose larva had proved very destructive to the eggs of locusts in the Troad, and now found as a powerful natural ally in attempting to prevent the devastating locust attacks in Cyprus. The information supplied to the Colonial Office cannot fail to be of practical use in the countries concerned, and the Society must congratulate itself on the way in which the Government has asked and received its help.

Altogether, during the past year, the Society has quite maintained its high position of usefulness. Increased interest has apparently been taken in its meetings, as evidenced by the published 'Proceedings,' while the Attendance-book shows that they have been remarkably well supported, the average attendance exceeding twenty-eight. The volume of 'Transactions' is one of the largest ever issued by the Society in any one year. It contains thirty-nine memoirs, contributed by seventeen authors, extending to 648 pages, exclusive of the 'Proceedings,' and is illustrated with the unprecedented number of twenty-two plates, of which three are coloured. Many of the memoirs are of special scientific interest; with some satisfaction the Council begs to point out that five or six of these relate to British Ento-

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mology, but it is to be regretted that more monographs, life-histories, or biological notices of our native insects have not been forthcoming.

This unusually large volume of the 'Transactions' has entailed greatly increased expenses for printing and plates, consequently last year's balance has almost disappeared. Had it not been for very liberal donations of money and the presentation of six plates the expenses of so rich a volume could not have been defrayed. Although the balance in favour of the Society has thus been reduced from £57 to between £3 and £4 our financial account, of which the following is an abstract, cannot be considered unsatisfactory:—

| Receipts. | | Payments. | |
|---|---|---|---|
| Balance brought forward | £57 | Rent, Office, and Meeting Expenses | £121 |
| Contributions of Members | 218 | Publications | 299 |
| Sale of Publications | 74 | Library | 26 |
| Interest on Consols | 9 | | |
| Donations | 91 | | |
| | £449 | | £446 |

The thanks of the Society are due to Mr. Dunning for £40, to Mr. Stainton for £25, and to Mr. M'Lachlan and several other members for liberal donations; to Lord Walsingham for defraying the cost of Plates x., xi., xii., and xiii., and to Mr. Pascoe for presenting Plates i. and ii., which illustrate their respective memoirs; also to Mr. Grut for gratuitously supplying the Library with a number of boxes for pamphlets, &c.

The Library has been increased during the year by many valuable donations, and a sum exceeding £26 has been spent on binding and in the purchase of books, increased attention being paid to the various entomological serials which hitherto the Society has not received. Among the additions the following works deserve special mention:—Walsingham's 'Pterophoridæ of California and Oregon'; Piaget's 'Pédiculaires'; Loew's 'Die Europäischen Bohrfliegen'; Saussure's 'Orthoptères de l'Amerique Centrale'; and the completion of the Atlas to Burmeister's 'Description physique de la République Argentine.' The Library regulations have been considered by the Council with a view to make the unbound books and pamphlets more accessible to members generally. The Council learns with much pleasure, from the Librarian's report, that the number of books borrowed has shown a large but steady increase during the last few years; in 1878, 131 volumes were borrowed; in 1879, 172; in 1880, 261; while last year the number rose to 319.

In conclusion, the Council begs to remind members that this is the fiftieth year of the Society's existence, and to express a wish that the present members will bring the Society's claims on their patronage before

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their fellow workers, that the jubilee meeting may show a much larger roll of members than the present muster. If the large body of entomologists in Britain who have not joined the Society did but know how great are the advantages offered to its members, it confidently expects that a large accession of members would be attracted. This would enable the Society to extend its publications and to enrich its Library; and the good work done by the Society being more widely known could but tend to foster the study of Entomology and accelerate its progress on a wider and more scientific basis, in this country.

11, Chandos Street, Cavendish Square, W.
18th January, 1882.

The President appointed Messrs. T. R. Billups and H. Bedford Pim scrutineers.

The following Members of Council were elected for 1882:—W. Cole, E. A. Fitch, W. A. Forbes, F. Du C. Godman, Rev. H. S. Gorham, F. Grut, W. F. Kirby, F. P. Pascoe, O. Salvin, E. Saunders, Lord Walsingham, C. O. Waterhouse.

The following officers were subsequently elected:—*President*, H. T. Stainton, F.R.S.; *Treasurer*, E. Saunders, F.L.S.; *Librarian*, F. Grut, F.L.S.; *Secretaries*, E. A. Fitch, F.L.S., and W. F. Kirby.

An address was then delivered by the President, at the conclusion of which Mr. J. W. Dunning moved a vote of thanks to Mr. Stainton for his services as President during the year, and proposed that his address should be printed with the 'Proceedings.' The proposal was seconded by Sir Sidney Saunders and carried by acclamation.

Mr. M'Lachlan proposed a vote of thanks to the Treasurer, Librarian, and Secretaries. Mr. Jenner Weir seconded the motion, which was carried unanimously.

Messrs. Grut and Fitch made some remarks in acknowledgment.

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## ABSTRACT OF TREASURER'S ACCOUNTS FOR 1881.

| Receipts. | | | | Payments. | | | |
|---|---|---|---|---|---|---|---|
| 1881 | £ | s. | d. | 1881 | £ | s. | d. |
| To Balance at 1 Jan. 1881 | 57 | 13 | 2 | By Rent, Salary of Sub-Librarian, and Office Expenses | 121 | 1 | 10 |
| Subscriptions, as per list | 164 | 17 | 0 | Printing | 218 | 8 | 5 |
| Entrance Fees | 16 | 16 | 0 | Plates | 81 | 2 | 4 |
| Arrears | 21 | 4 | 0 | Books, Binding, &c. | 26 | 6 | 6 |
| Composition | 15 | 15 | 0 | | | | |
| Donations | 90 | 16 | 0 | | | | |
| 'Transactions' | 74 | 15 | 2 | | | | |
| Consols, interest on £313 4s. 8d. | 9 | 3 | 3 | Balance | 3 | 10 | 6 |
| | £450 | 9 | 7 | | £450 | 9 | 7 |

### ASSETS.

| | £ | s. | d. |
|---|---|---|---|
| Subscriptions due, considered good | 10 | 10 | 0 |
| Consols, £313 4s. 8d. (cost) | 293 | 4 | 0 |
| Balance in hand | 3 | 10 | 6 |
| | £307 | 4 | 6 |

EDWARD SAUNDERS, *Treasurer.*

Audited and found correct.
J. W. MAY.
V. R. PERKINS.
R. MELDOLA.
WM. COLE.
J. W. DUNNING.

11, *Chandos Street, Cavendish Square, W.*
*11th January*, 1882.

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# THE PRESIDENT'S ADDRESS.

GENTLEMEN,

As already remarked in the Report of the Council, by the death of JOHN GOULD, F.R.S., the celebrated Ornithologist (or, as he preferred to call himself, the "Birdman"), we have lost one of our few still remaining Original Members. These are now reduced to seven, one of whom, I am happy to see, is still a regular attendant at our meetings, and another is constantly occupied yet with entomological work, though his appearances here are now somewhat "like angels' visits, few and far between."

I am not aware that the late John Gould ever published anything on entomological subjects; his name does not occur in Hagen's 'Bibliotheca Entomologica,' but his sustained interest in this Society is shown by his continuance as a member for nearly forty-eight years, without having compounded. Such members are clearly far more profitable to the Society than those who compound soon after joining our ranks. Perhaps the example which our Treasurer would best like to see generally followed would be that of the late Dr. Garnier, Dean of Winchester, who, after paying an annual subscription to the Linnean Society for more than sixty years, eventually compounded when between eighty and ninety years of age.

The Report of the Council alludes also to the gap in the ranks of our Honorary Members caused by the death of ACHILLE GUENÉE, of Châteaudun. His decease was mentioned in the report of our Council a year ago; but as his loss was then too recent for any details to be given, it appears to me that some

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notice of so distinguished an entomologist may fitly find a place here.

I had repeatedly noticed myself, when visiting France and conversing with entomologists there, that Monsieur Guenée did not seem to occupy so conspicuous a place in the minds of French entomologists as he did in the entomological circles in this country. I find that in the biographical notice of Guenée given by Mons. Paul Mabille in the 'Annales de la Société Entomologique de France,' 1881 (p. 8), precisely the same sentiment is expressed:—"La réputation que Guenée s'était acquise était peut être plus grande à l'étranger que dans sa patrie; il est certain que ses travaux sont plus suivis en Angleterre qu'en France. En Allemagne, Guenée était regardé comme le premier des entomologistes français."

I am not quite prepared to endorse this last sentence; indeed I could certainly mention one distinguished German entomologist, who never seems to have had any very exalted opinion of Achille Guenée; but it may be of interest to enquire how it happened that Guenée was so much thought of in England.

To understand this we must glance at the state of Lepidopterology in this country some forty years ago, when a well-filled library of a British lepidopterist contained only Curtis's 'Guide,' and his 'British Entomology'; Stephens' 'Systematic Catalogue,' and his 'Illustrations of British Insects'; Wood's 'Index Entomologicus,' and Westwood and Humphrey's 'British Butterflies and British Moths'; Haworth's 'Lepidoptera Britannica,' in its complete form, was rarely to be met with. John Curtis himself and James Francis Stephens had far more extensive libraries, of course, and the latter threw his library open to all entomologists every Wednesday evening; but any regular correspondence and interchange of thought with Continental entomologists was never for a moment thought of, and the subject was looked at too exclusively from an insular point of view.

In 1842 the late Henry Doubleday brought the name of Guenée prominently before English collectors by publishing, in the pages of the 'Entomologist' (i. 377—380), "A list of the British Noctuæ, extracted from the arrangement of the European species in the 'Annales de la Société Entomologique de France,' by M. Guenée." This arrangement by Guenée had appeared

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at intervals during the preceding five years, and any one who glances through the list in the 'Entomologist,' and recollects our previous arrangement, will recognise at once the much more natural sequence of many of the species. Many of my younger hearers have naturally no recollection of the arrangement generally adopted in our collections forty years ago, and even older entomologists may find a difficulty in again realising the "standpoint" from which we have so long since departed.

The few observations by Henry Doubleday which followed this list, suggesting that in some cases simple varieties had been wrongly elevated to the rank of species, implied also that there was much yet to be fully worked out as to the claims of many of our named specimens to rank as species.

In the following year Henry Doubleday visited Paris, and a "Note on the Names of British Moths," in the first volume of the 'Zoologist,' p. 332, shows at once how much need there was for intercommunication with Continental entomologists, if there was any wish on our part to come to some agreement with them as to the proper nomenclature of species. From that date a regular correspondence between Henry Doubleday and Achille Guenée was kept up for many years, and most of our older lepidopterists can remember how in those days specimens of any novelties were submitted in the first instance to Henry Doubleday, who, if unable to decide upon them at once, in due course transmitted them to Châteaudun to obtain the opinion of the more learned Achille Guenée himself. In this way there arose amongst us a general expectation of "What does Guenée say?" when each successive addition to the British Fauna was submitted to him.

It must be borne in mind that in those days the very commonest species occurring in France or Germany, which had not already been detected in this country, were as utterly unknown to the mass of British lepidopterists as if they were inhabitants of another planet. In Paris the collections consisted not only of French species, but of those occurring in other parts of Europe, and hence a French lepidopterist soon obtained a far more general knowledge of his subject than the exclusively British collector, with his more limited horizon, could hope to attain. In this way it happened that insects which would have puzzled a whole conclave of British lepidopterists were perfectly familiar to Achille Guenée; they had perhaps been old friends of his

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from his boyhood, and thus the naming of them caused him neither trouble nor difficulty.

Guenée's great work on the "Noctuélites" of the whole world, in three volumes, 8vo, appeared in 1852, forming part of the "Suites à Buffon" series, and being a portion of the "Species général des Lépidoptères, par MM. Boisduval & Guenée." This work is so well known to most entomologists that it is unnecessary to enlarge upon it here. Two years later there appeared another volume of the same series from the pen of A. Guenée, treating of the "Deltoides et Pyralites," the *Geometrina* being reserved for a later period.

It was this delay in the appearance of his volume on the "Phalénites' which first led to my being thrown into a somewhat intimate relationship with Achille Guenée, which happened in this way:—The last number of the first volume of 'A Manual of British Butterflies and Moths' appeared April 1st, 1857: in this volume the *Noctuæ* were concluded, and the *Geometræ* were to commence with the next volume. Throughout the *Noctuæ* I had followed the arrangement of Guenée, and I wished to have his arrangement of the *Geometræ*, that I might follow it also; and it therefore became necessary to defer for a time the commencement of vol. ii. of the 'Manual,' in order to allow of the appearance of Guenée's volumes on the "Phalénites.'

In 1856, on the occasion of my second visit to Paris, I had contemplated going to Châteaudun to see Monsieur Guenée, but on writing to him found that he was then at Chartres, where he generally spent the winter months; now Chartres being on the railway was far more accessible, and I had no difficulty in spending several hours with him at Chartres, and returning to Paris the same evening: consequently when, in April, 1857, at the commencement of the interregnum between the two volumes of the 'Manual,' I found myself again in Paris, I proposed to Guenée to revisit Chartres, as I was extremely desirous of learning, if I could, somewhat of his proposed arrangement of the *Geometræ*.

At that very moment Achille Guenée and his family were on the point of starting for their summer residence at Châteaudun, but the hospitable entomologist had no notion of losing my visit on that account, though from Chartres to Châteaudun there was then no communication by railway; a diligence met certain trains,



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and he urged me to push on to Châteaudun, where he would meet me and conduct me to his country residence. The prolongation of the journey—six hours instead of two—appeared trivial in his eyes. "What matters an additional thirty or forty miles when you are once on the road?" was his question, but when the additional distance to be travelled is in a diligence and not by railway, we are apt in these days to look upon it as a more serious matter.

He pressed me to come and stop a few days with him, and thus it happened that in April, 1857, I remained, from Monday, April 20th, to Wednesday, April 22nd, his guest at his residence, "Les Châtelliers," near Châteaudun.

The house was situated in a little wood, and from the front of the house a series of perfectly straight alleys, which had been cut amongst the trees, branched off in a dozen different directions. A small open space immediately before the house was gay with *Genista sagittalis* and other plants strange to my eyes.

We found much to talk over, and there were many points on which he was anxious to compare notes. He was never tired of asking me about his correspondent Henry Doubleday, who had proved so valuable a friend to him, having repeatedly exerted himself to procure for him many species that he had particularly desired to see. We took a turn in the wood near the house, and he showed me how, by picking up a mass of dead leaves, placing them in an inverted umbrella and turning them over, it was comparatively easy to find the larva of *Pachetra leucophæa* and other species, which were usually rare unless sought for in that way. There is no doubt that entomologists of different countries might learn a great deal from each other, even in the simple matter of practical collecting, by mixing more together than they do.

Of Guenée's readiness to assist me, in every possible way, I had abundant proof, and I can repeat the words of Monsieur Paul Mabille, "Guenée était d'une complaisance sans bornes; il ne ménageait point sa peine . . . ." But, notwithstanding my visit to Châteaudun, I found I was unable to accomplish the special object I had so much at heart—the earlier appearance of the first number of the second volume of the 'Manual'; and there was an interval of precisely twelve months between the close of vol. i. and the commencement of vol. ii. The pilgrimage,

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however, to Châteaudun remained a pleasing event in my life, and from that time till his death I continued to be a frequent correspondent of Achille Guenée. He called on me in Paris in March, 1872, but as that was the last time I was in France I never saw him again.

It is much to be regretted that Guenée never visited England; his relations with Henry Doubleday were at one time so extremely intimate that I can conceive no greater enjoyment than for the two entomologists to have met at Epping. At the time of Henry Doubleday's serious illness in 1871, Guenée wrote to me, very anxiously inquiring as to his state of health, and assuring me that the Epping entomologist still remained "placé au premier rang dans mon estime et dans mon affection."

Perhaps when the Channel Tunnel is completed foreigners will be more ready to visit us. The Continent being so much larger than our island, it seems to the Continental entomologists only natural that we should cross the Channel to visit them, but it scarcely ever occurs to them to come to our shores, and thus they debar themselves from much conversational interchange of thought, by which our Science would assuredly be benefited.

Thirty-five years ago there was penned by the late James Francis Stephens, then in his fifty-fifth year, a note on a "Plan for an Entomological Journal." This appeared in the 'Zoologist' of October, 1847, and to many other entomologists besides myself this simple note has formed an era in our lives.

The origin of Mr. Stephens' note was this—he had just found in his collection two species of Coleoptera, which had been overlooked, and which were new to the British list. The specimens had been in his collection for many years, and he had no means of ascertaining where or when they had been captured. One, at any rate, he believed had been in his possession for upwards of thirty-one years! Who has not had similar experience?—that of finding that he had mixed together two allied species, and afterwards, when their distinctness has been pointed out, of being perplexed to say when or where each had been taken?

"Most of the journals hitherto proposed" (wrote Mr. Stephens) "presuppose the journalist to possess a slight knowledge of Entomology; but the plan I suggest is unencumbered with any such supposition, and has the additional advantage of

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enabling the possessor instantly to refer to the capture, &c., of every individual example in his collection at any future period, notwithstanding the same may have been removed upon re-arranging 'many a time and oft'; and a small book of a few leaves will serve for many years. Not so a journal of names; such a one I commenced in 1810, and have carried it on to the present time, 1847!—very irregularly in parts, it must be confessed, owing to the enormous quantity of entries, sometimes more than 3000 in a month!—till the number recorded has extended to between 30,000 and 40,000; a sad expenditure of labour, and from its extent comparatively useless."

Here let us pause to moralise: an entomologist in his fifty-fifth year admits that for thirty-seven years he has been sailing on a wrong tack, and that both time and labour have been wasted.

And yet the time was not wasted, if such a reflection led to the dawn of better things; the writer was here manifestly making those "footprints on the sands of time" from which "another—shall take heart again."

Mr. Stephens then proceeds to unfold his proposed plan, that each insect should bear a number, from which, by reference to a journal, its date and locality, with precise habitat, could be at any time identified.

The details sketched out by Mr. Stephens have not recommended themselves for general adoption, mainly because his suggestion was that if twenty different insects were captured at the same time and place, under similar circumstances, they should all bear the same number; but his recommendation that each insect should bear *a number* has, I am happy to say, been very largely followed.

Prior to the appearance of Mr. Stephens' note I had followed the plan previously adopted by that entomologist. I had kept a "journal of names"; this began in 1838, and from my defective knowledge at one time, this journal would only mislead any one into whose hands it might fall, as the names therein entered were very often not at all those of the captures I had actually made.

With the 1st January, 1848, I turned over a new leaf, and from that date all my captures have borne a number, and can be referred to instanter. Those for 1848 simply bear the numbers

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with the letter S prefixed; but the following year I began with adding the year, and the first capture of 1849 is labelled $\frac{S\ 1}{49}$ and so on to the present time.

Over and over again have I recognised the extreme value of these labels; many a time has it happened that on a closely allied new species being added to our lists, I have been able to find that I had specimens of it, having previously overlooked its distinctness, and then, by the numbers which these specimens bore, I could trace at once when and where they had been captured.

Unfortunately I did not carry out one portion of Mr. Stephens' plan,—that of numbering any specimens I received from any of my numerous correspondents,—and the consequence is that hundreds of specimens have been added to my collection since 1848 which bear no numbers, and at this distance of time, with the defective memory incidental to advancing years, I find myself frequently quite in the dark as to where the specimens can have come from.

Having pointed out the vast stride that was effected in the inherent value of our captures by the simple plan of numbering each specimen, and having the precise origin of each number recorded in a journal, I would now ask whether some further step could not be taken to increase the utility of our specimens? The acquisition of each specimen, though doubtless it has afforded us much pleasure, has consumed time and entailed labour; should we not, therefore, seek to elicit the greatest possible amount of utility from each specimen?

The system of labelling with a number, and making an entry in a journal, is of use during the lifetime of an entomologist; but even were we to live to the age of Methusaleh, the system would be rendered useless by our decease, as in all probability the insects would go in one direction, and the journal in another; therefore, the question will arise whether some more complete form of label might not be devised, which would supply in itself the pith of the information obtainable by a reference to the journal.

I find that it is really practicable, by writing very neatly, to get the locality, date, and other information written within the compass of a label less than half an inch square; and if this be then attached to a specimen, it speaks to all future time as to

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its "birth, parentage, and education," though journals may be burnt and collections dispersed.

I can readily understand that the objection may be started that if this written label be placed under the insect with the writing downwards, it is necessary to take up every individual specimen in order to read the contents of the labels, and that if the label be placed under the insect with the writing upwards, the information will be even more effectually hidden from sight.

Perhaps some day the progress of civilisation will enable us to get over this difficulty, by the general adoption of long pins for the insects in our collections. Specimens on long pins are far safer from the attacks of mites and other pests, and ample space is also given for the display of instructive labels, giving all needful information about the individual specimens.

But even pending the adoption of the long pins, which to the truly conservative entomological mind must appear a far more revolutionary proposal than the extension of household suffrage to the counties, I think it is possible to get over the difficulty of making the labels readily visible, by mounting the insects on artichoke pith.

The pith of the Jerusalem artichoke is admirably adapted for this purpose; our German friends, who first started the notion of mounting their Micro-Lepidoptera on pith, began by using the pith of the elder, but that, even if white at first, is apt to be discoloured by age, whilst the pith of the Jerusalem artichoke retains its beautiful whiteness.

The annual stems of the artichoke are otherwise useless, and are cut down and thrown away, or burnt at the approach of winter, but to the entomologist they have a special value, from containing such a bounteous supply of this useful pith. When I first wanted to use this pith, I thought that I should find that some one had had the idea of preparing such a product for sale, but I found on inquiry that the habit of each entomologist was to prepare his own pith, and after a certain amount of bungling, I contrived to get into the way of doing so for myself. The best instruction I got was from Herr Hartmann, of Munich, who assured me that the main thing was to have a very sharp pen-knife, with which to cut the pith.

Now just conceive the difference in the amount of information afforded by two drawers of insects, in one of which each specimen

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is competent to instruct the stranger, who is looking at it, when and where it was taken, or if reared from the larva when it emerged, and what had been its food-plant, whereas in the other drawer all such information is latent in the head of the happy possessor of the collection.

Unless our own education has been so neglected that we set no value on information when we have it, the difference between the sight of the drawer of labelled insects and the drawer of unlabelled ones should be as startling as that between light and darkness.

To the young entomologist, who has plenty of spare time in the winter months, and who has kept a journal of his summer captures, each of which bears a number, I can recommend as most profitable occupation that of attaching labels with date, locality, &c., to each specimen. And when this system has been regularly pursued for a few years, he will gradually find that his old unlabelled specimens lose their value in his eyes; nay, I should not wonder if eventually an unlabelled specimen should be looked upon as of as little value as any unset or ill-set specimens, and without the slightest remorse consigned to the flames.

Not that I am recommending that any one who has no labelled specimens, and no means of attaching labels, for want of having had his captures numbered, should at once burn his whole collection; for, though that may be its fate ultimately, it is best to proceed cautiously, and a wholesale conflagration might cause the loss of some specimens which, owing to the very uncertain and irregular appearance of some insects, it would be many years before he would have the opportunity of being able to replace.

It is only quite of late years that the value of labelled specimens has impressed itself so much upon me, perhaps being aided by the slips in my memory, but now I feel it is an actual wrongful act to place an insect in my cabinet without a label; and I can easily conceive that some of my correspondents have mentally thought me (whatever they may have said) "an awful bore," when, instead of simply thanking them for a box of specimens they have been so kind as to send me, I have written to ask them "when and where" they were taken.

I do not know that I can use any stronger arguments in favour of a systematic labelling of specimens; the process

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consumes time, entails trouble, and also, which is perhaps the most serious matter, requires additional space in a collection; but is the additional cabinet-room required too great a tax, having regard to the great increase which necessarily takes place in the utility of the collection? I apprehend that no one who seriously tries the plan I am propounding would afterwards feel disposed to abandon it, under the impression that the "bother" was more than its worth.

One point to which I attach great importance myself is the cumulative evidence that would in this way be obtainable on the habits and food-plants of species. The capture of single specimens sometimes only seems to perplex us, for a species may be suspected to feed on some particular plant, and we do not happen to meet with it just where, by this theory, we ought to expect to find it, and if we never have the good fortune to take this particular rarity again, no progress seems to have been made.

But now, suppose that we were to be looking through twenty different collections, each of which only contained a solitary specimen of this rarity, in some instances taken "on palings" or "trunks of trees," or "flying along hedges," or "attracted by light," yet should it so happen that, among the twenty labels which we studied in our researches, eight out of the twenty single specimens had been taken on some particular plant, the cumulative evidence thus obtained would be far stronger than if one person had happened to take six specimens from that special plant.

It may well be that other benefits would accrue from the continued and persistent habit of labelling, which we do not at present value, for it will frequently happen that the steady pursuit of any system will after a time develop results which no one had in the first instance anticipated.

When James Francis Stephens penned that short note in 1847, he perhaps scarcely anticipated it would have been so productive of good results, as I believe it to have been; and probably it never occurred to him that thirty years after his decease it would serve as the text for a Presidential Address at the Entomological Society.

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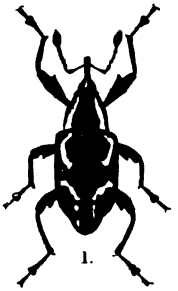

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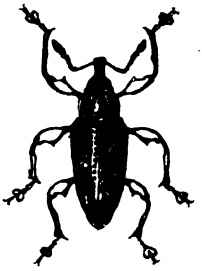

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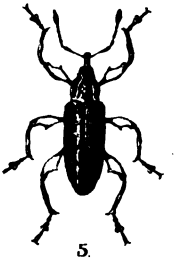

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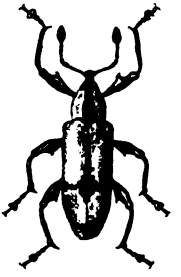

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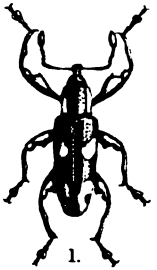
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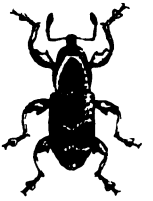
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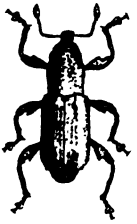
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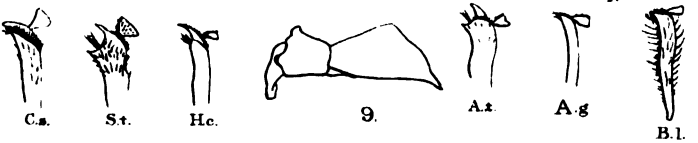


Edwin Wilson del et lith

Mintern Bros imp

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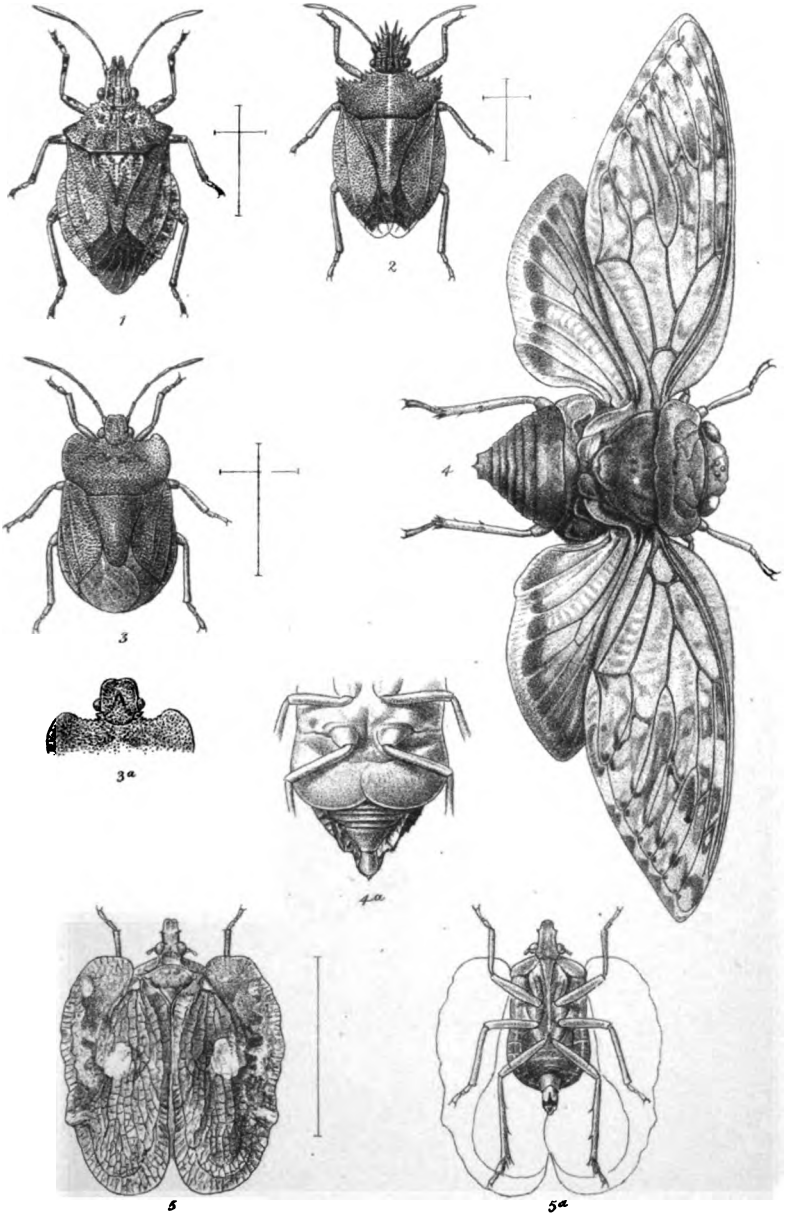


W. Purkiss lith

Hanhart imp

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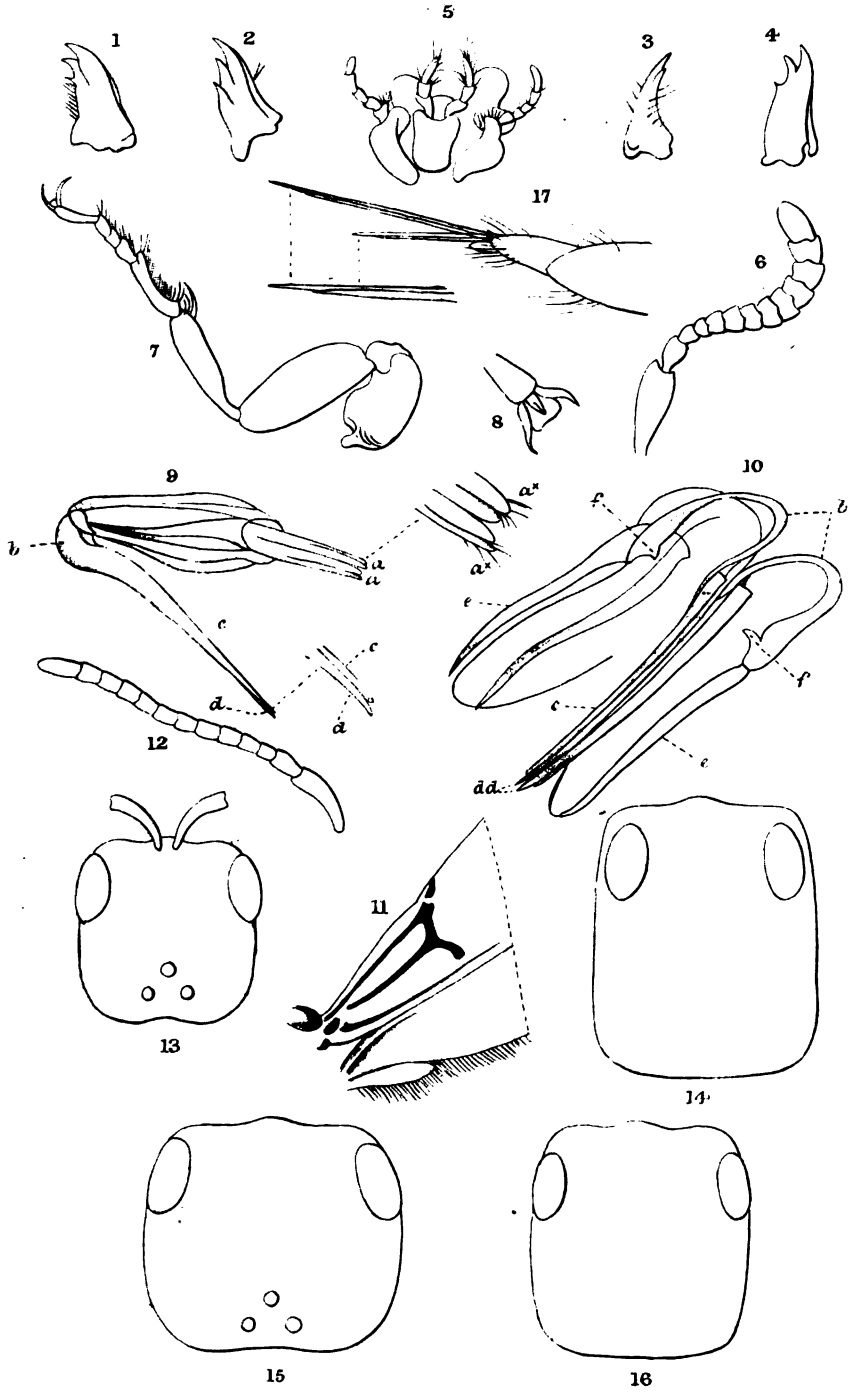


Horace Knight lith.

West, Newman & Co imp.

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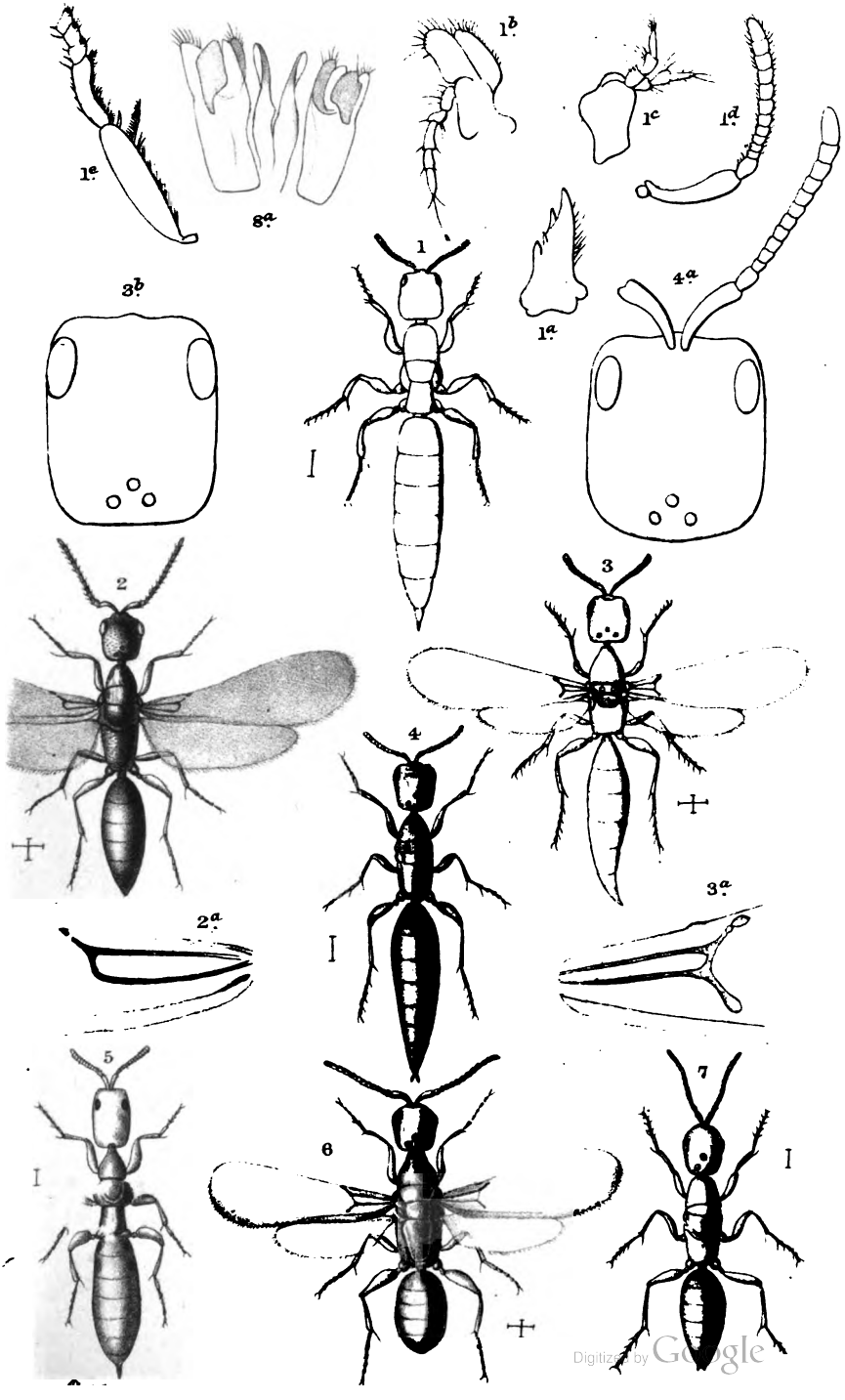


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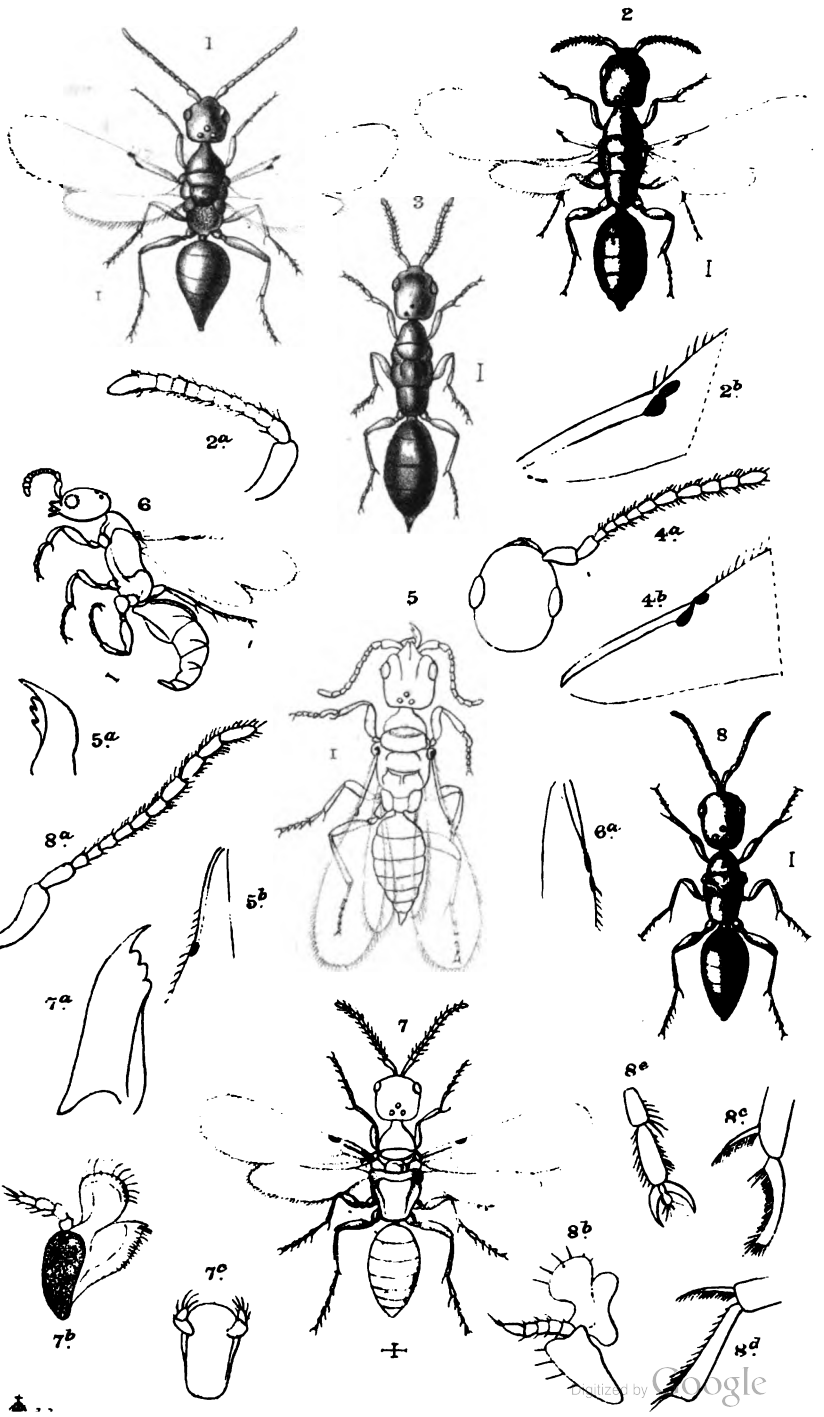


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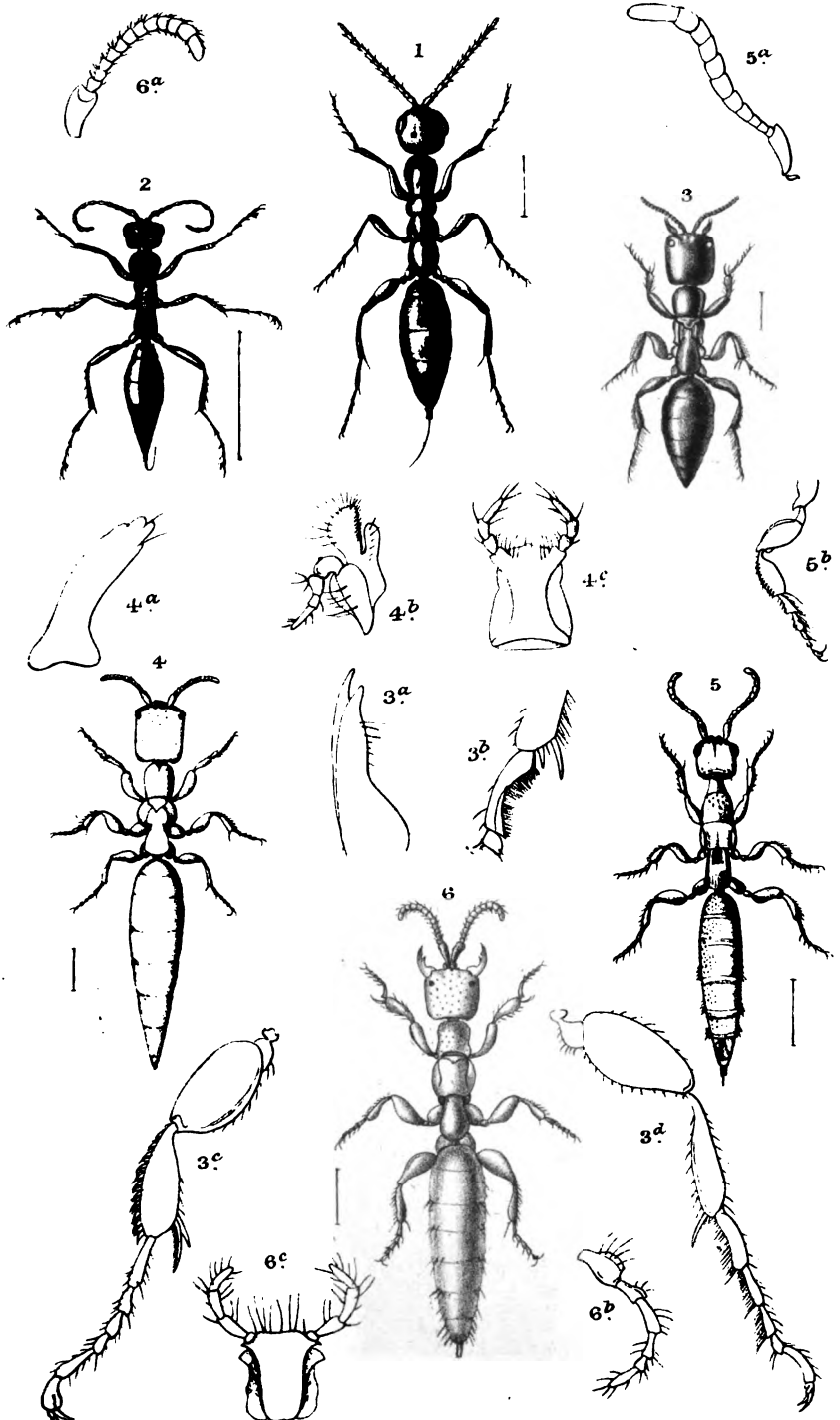


del.
Harvey Knight lith.

West, Newman &

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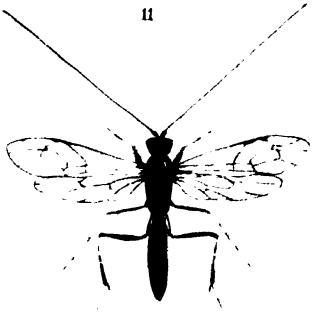
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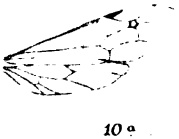
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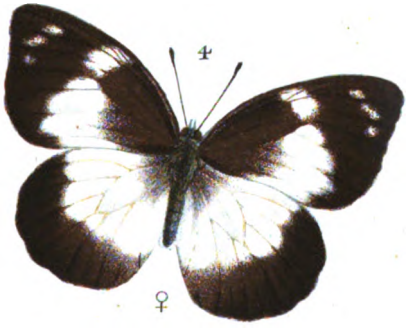

1. 2. Papilio Cenea, *Stoll.* (Merope *Trimen*) ♂, ♀.

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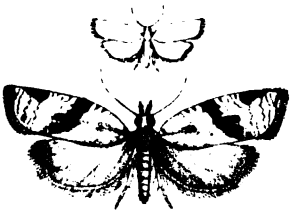

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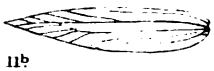

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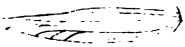

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Edwin Wilson del et lith.

Muntern Bros. imp

South African Micro-lepidoptera

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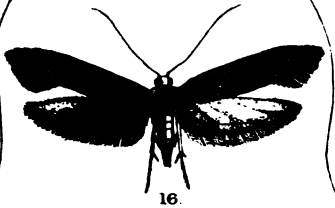

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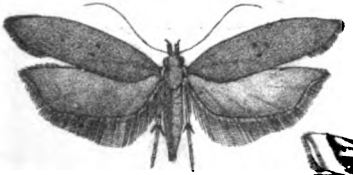

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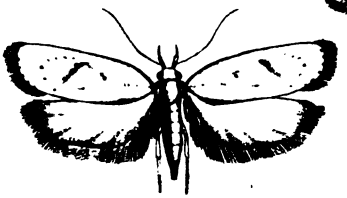

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Edem Wilson del et lith.

Mintern Bros. imp

South African Micro-lepidoptera.

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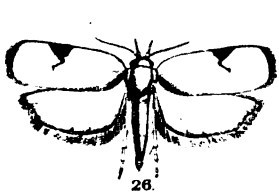
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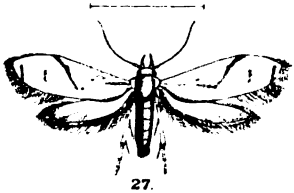
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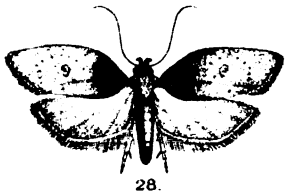
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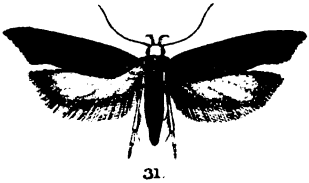
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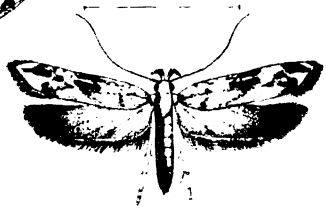
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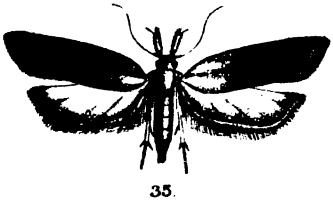
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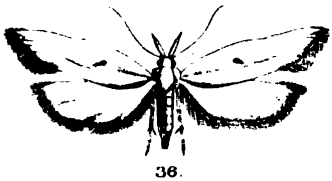
36.

Edwin Wilson del et lith. Mintern Bros imp

South African Micro-lepidoptera.

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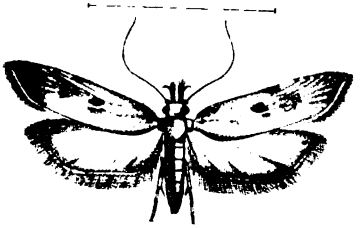
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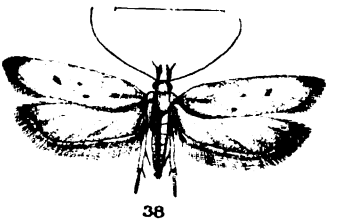
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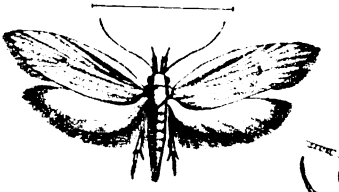
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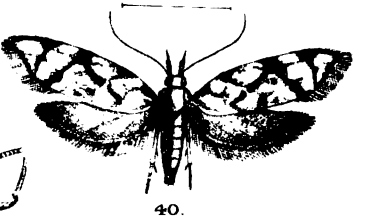
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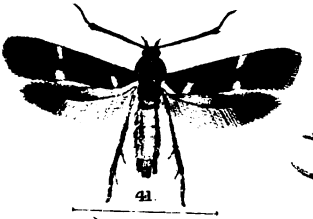
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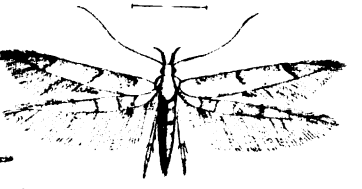
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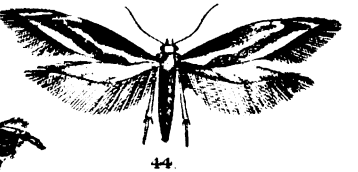
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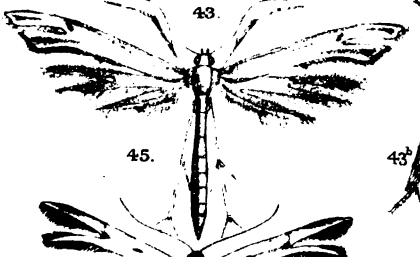
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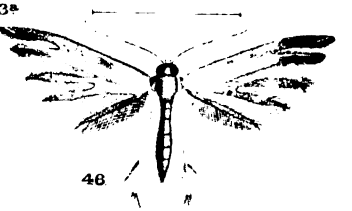
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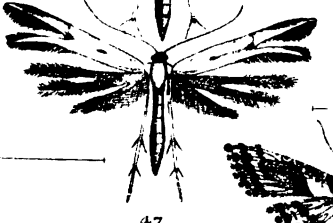
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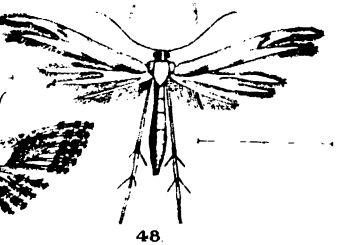
48.

Edwin Wilson del et lith.

Mintern Bros. imp.

South African Micro-lepidoptera

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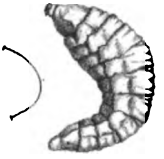
2a.



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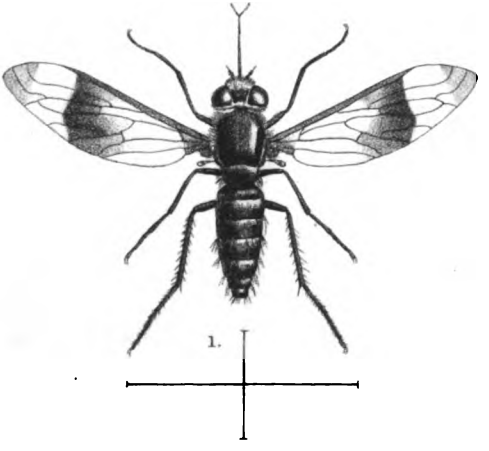

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Edwin Wilson del et lith. Mintern Bros. imp.

Callostoma fascipennis, Macq.

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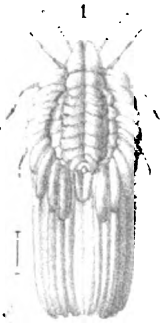


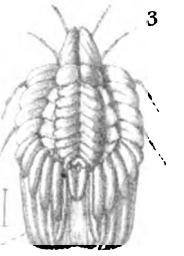

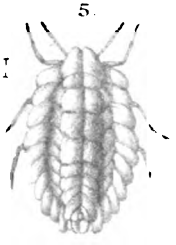

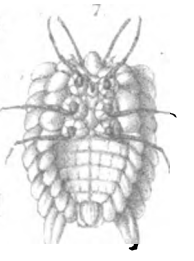


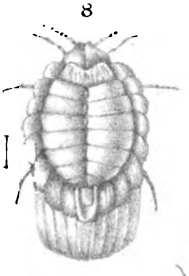

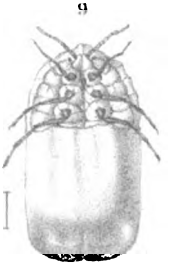

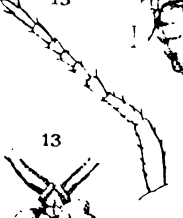


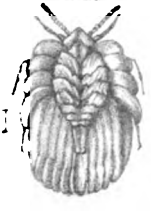

Horace Knight ad. nat. lith.

West Newman & Co. imp.

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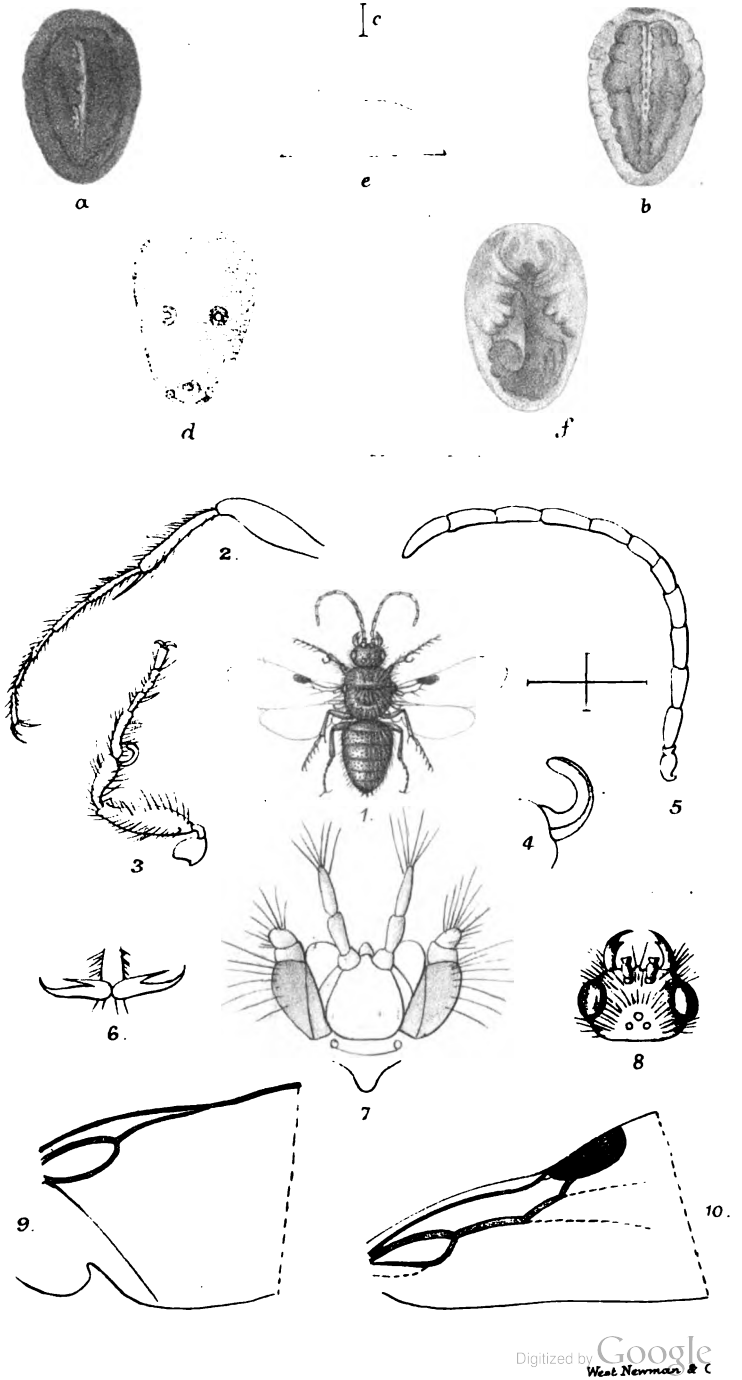


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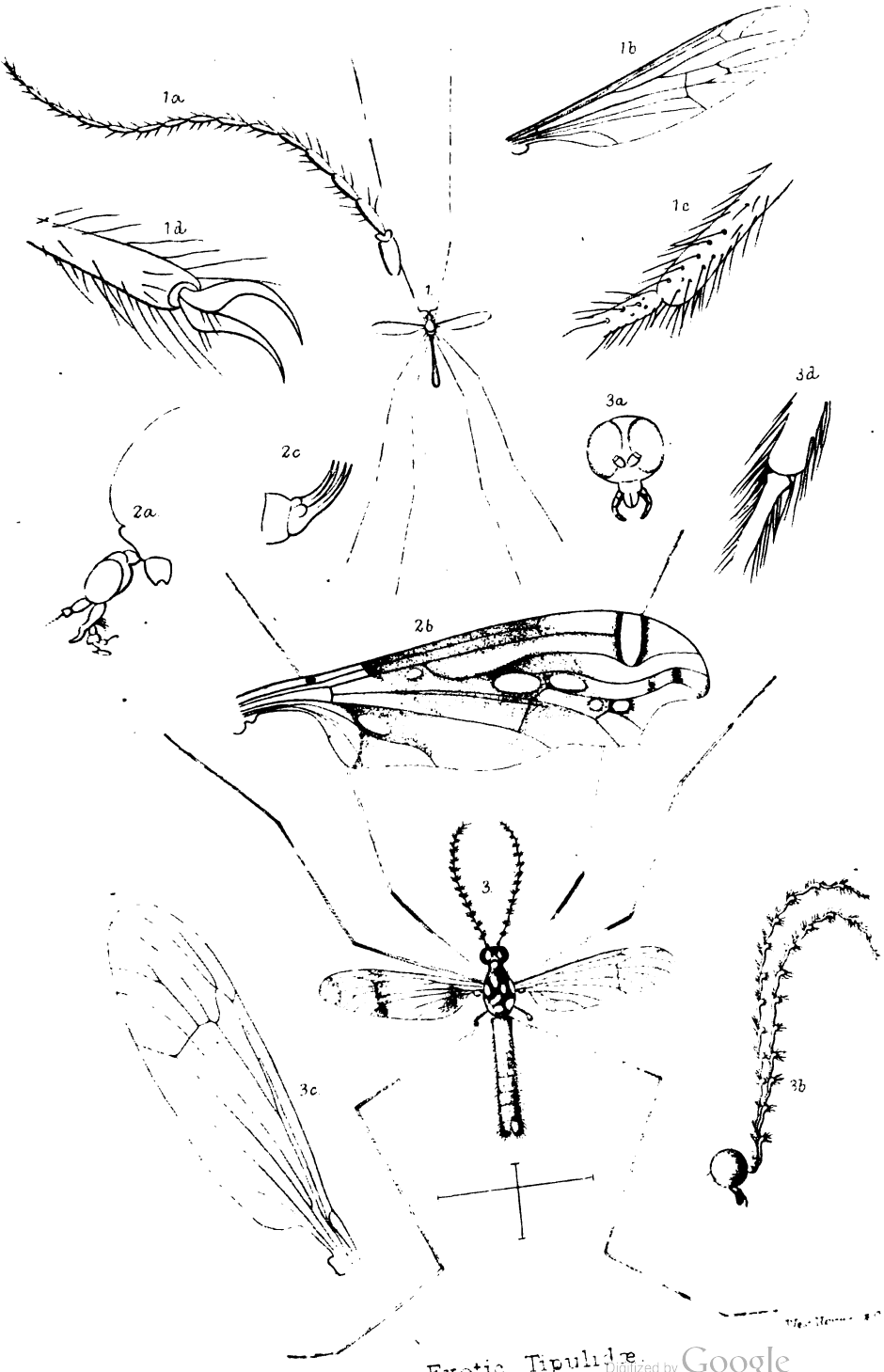


Exotic Tipulidæ.

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Exotic Tipulidæ.

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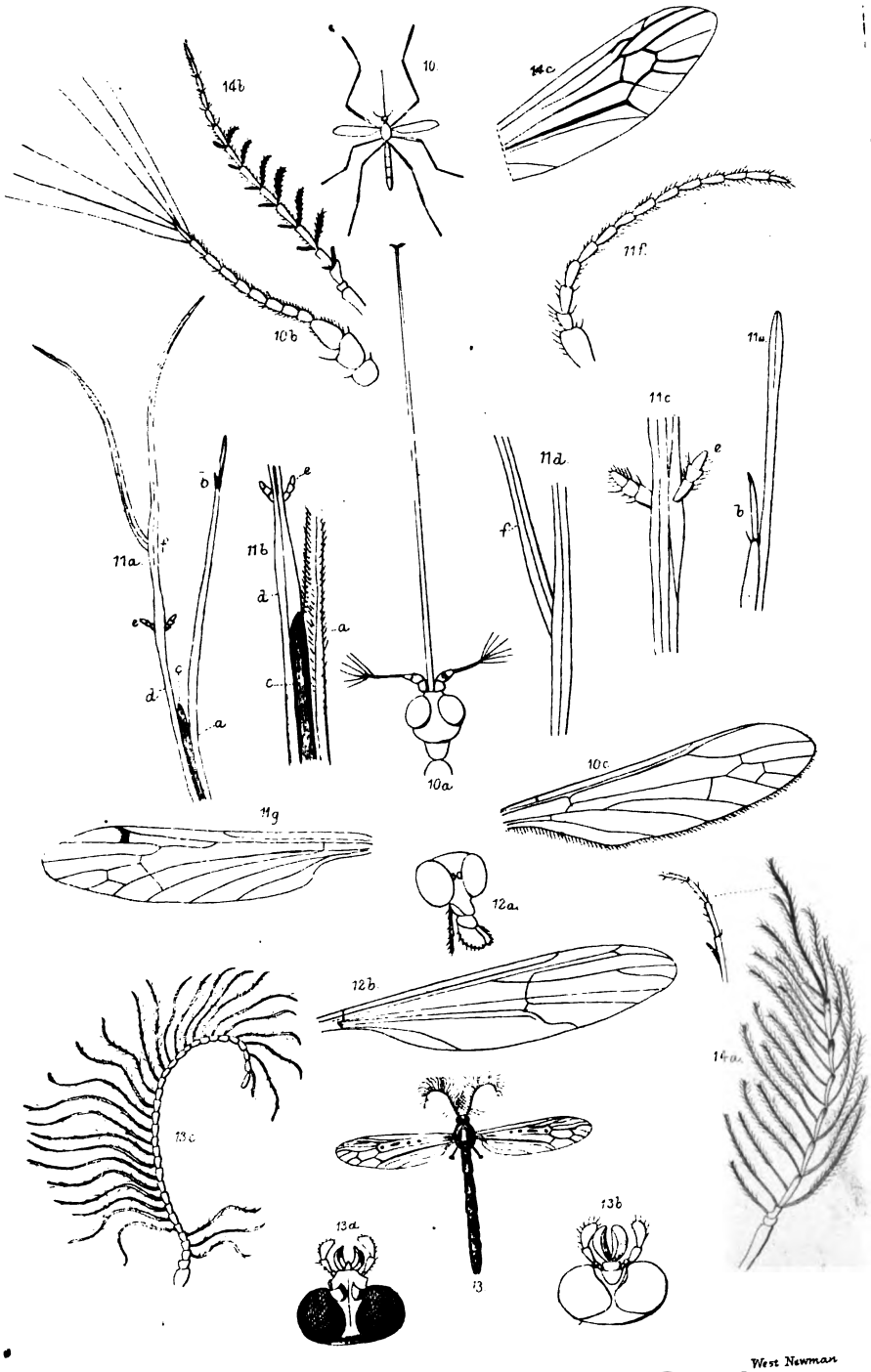


West Newman

Exotic Tipulidæ.

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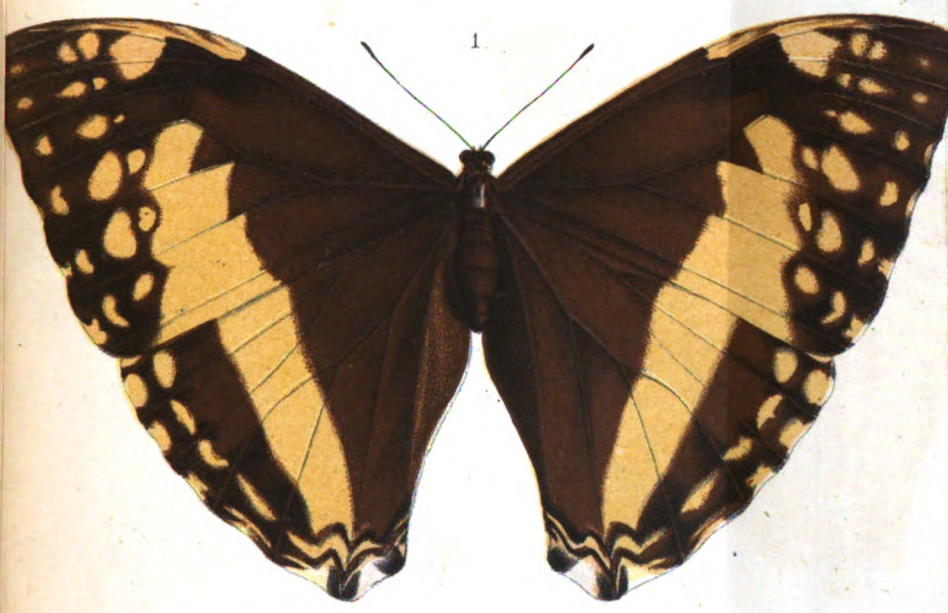

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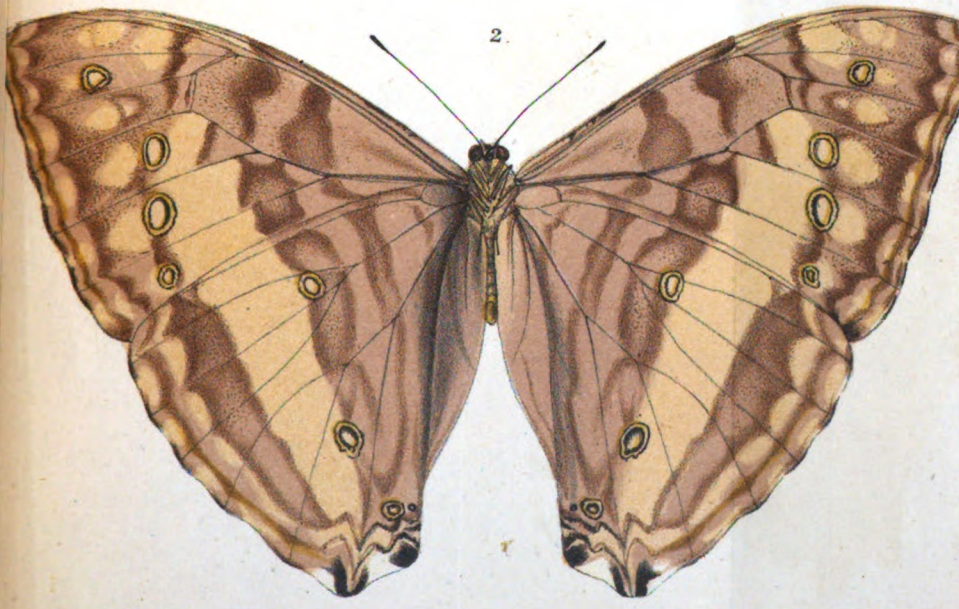

Morpho adonis Cram. ♀

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A.H. Searle. del et lith.

Butterflies of Chili

Mintern

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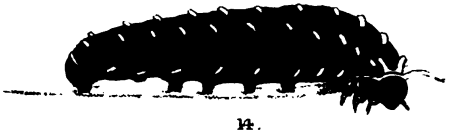

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A.H. Searle. del et lith.

Mintern Bros. imp.

Butterflies of Chili.

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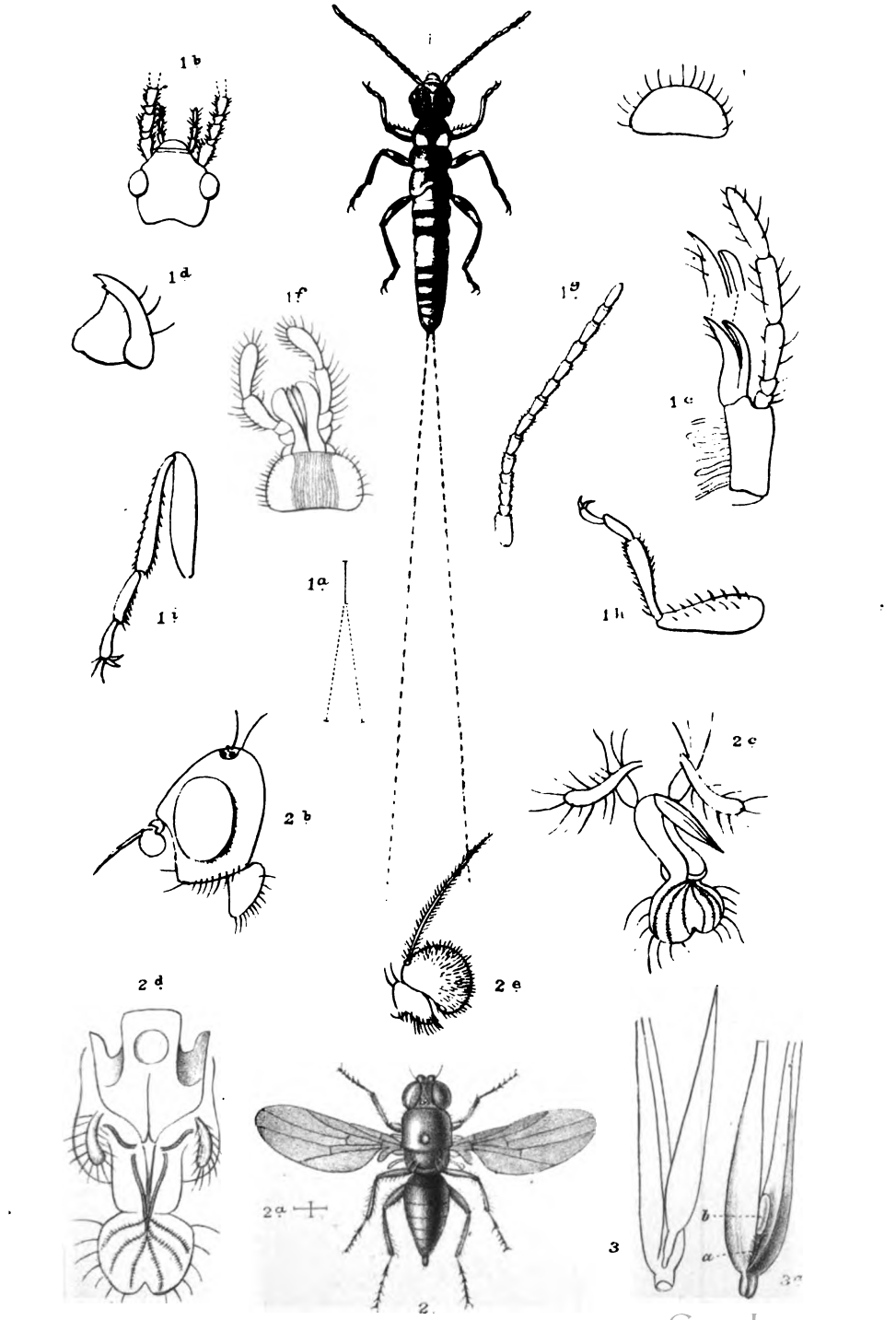


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### 11, CHANDOS STREET, CAVENDISH SQUARE, W.

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OF THE

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OF

# LONDON

FOR THE YEAR

# 1881.

PART IV.

*WITH TWO PLATES.*

(DEC. 22ND, 1881.)

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